NETGEAR

LTE Broadband 11n Wireless Router MBR1515

User Manual

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USA

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Connect to the Internet

1

This chapter describes how to configure your LTE Broadband 11n Wireless Router MBR1515 Internet connection.

- *Hardware Features*
- *Log In to Your Router*
- *Manually Configure Your Internet Settings*

Note: For help with installation, see the *LTE Broadband 11n Wireless Router MBR1515 Installation Guide.*

Note: For more information about the topics that are covered in this manual, visit the support website at *support.netgear.com/general/contact/default.aspx*.

Hardware Features

This section outlines the physical aspects of your LTE Broadband 11n Wireless Router.

Position your router upright. Place the router near an AC power outlet in a location where you can connect the cables you need for your home network. The router must also be located where you can receive a strong mobile broadband signal while indoors if you are planning to connect to the Internet using mobile broadband.

Router Front Panel

The router front panel contains control buttons and status LEDs. Use the LEDs to verify status and connections.

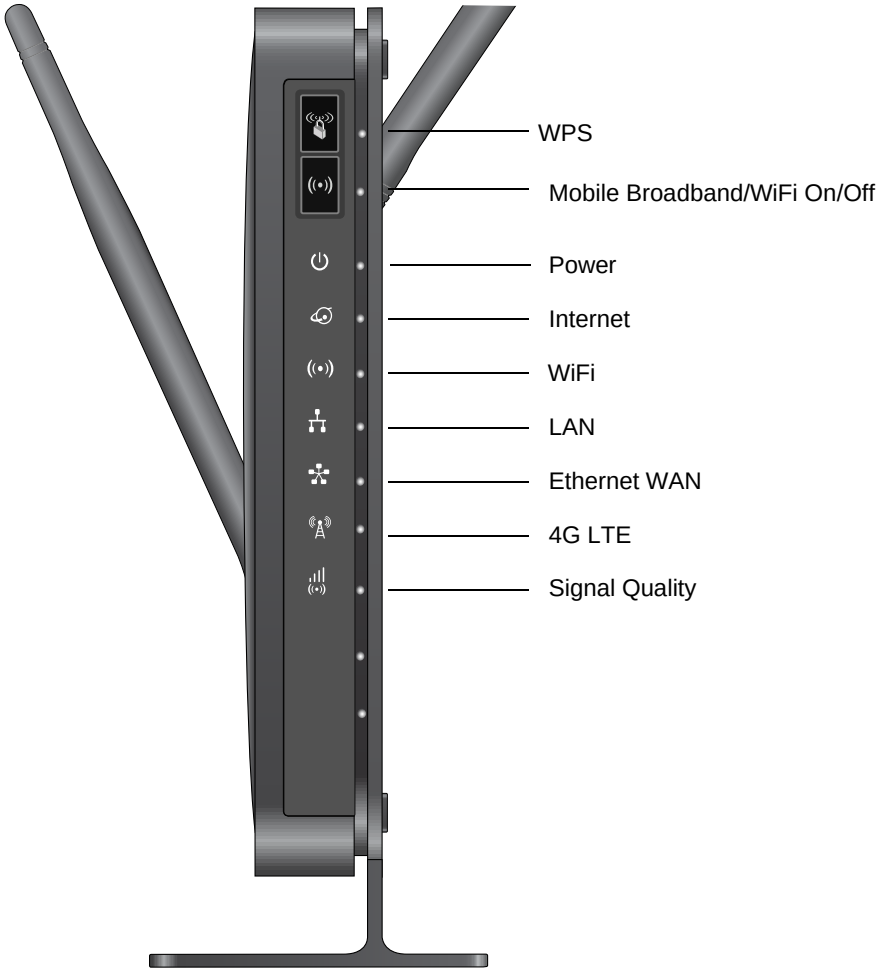


Table 1 describes each LED and button on the front panel of the router.

Table 1. LED descriptions

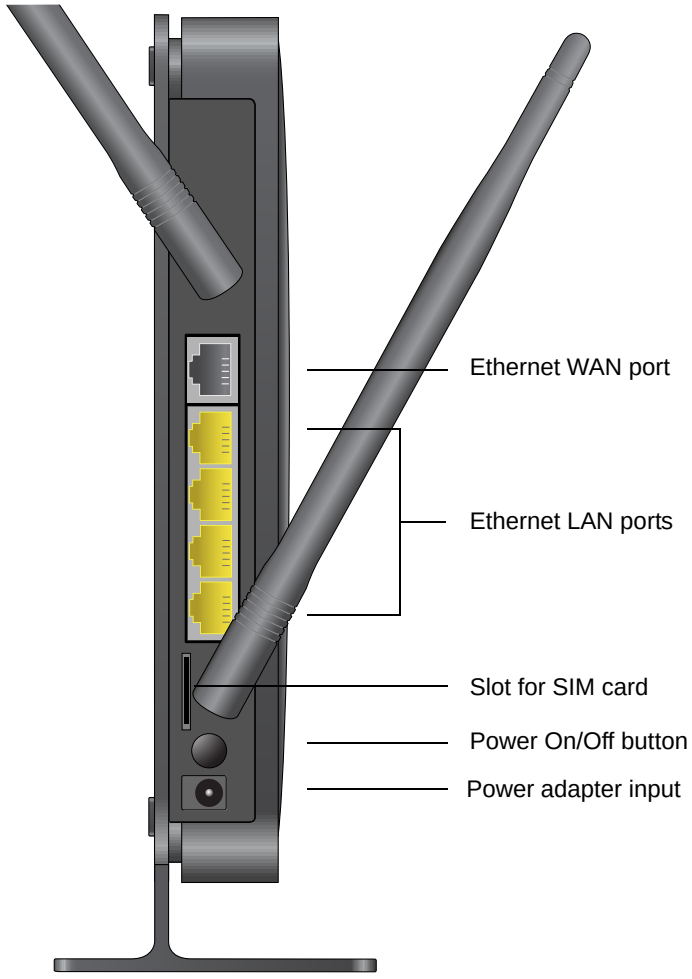
LED	Activity	Description
WPS	Press the WPS button to open a 2-minute window for the router to connect with other WPS-enabled devices. For more information about this function, see *Use Push 'N' Connect (WPS) to Configure Your Wireless Network* on page 29.	
Wireless On/Off	This button can be used to control the WiFi radio or both the WiFi radio and mobile broadband radio. Use the router interface to select the options. The default is set for WiFi radio only.	
Power	Solid green	The router is turned on and operating normally.
	Solid amber	There has been a power-on self-test failure or device failure.
	Off	Power is not supplied to the router.
Internet	Solid green	There is an Internet session.
	Blinking green	Data is being transmitted over the Internet connection.
	Blinking green and amber	There has been a failover from WAN to mobile broadband.
	Off	No Internet connection detected.
WiFi	Solid blue	The WiFi local port is initialized.
	Blinking blue	Data is being transmitted or received over the WiFi link.
	Off	The wireless access point is turned off.
LAN	Solid green	The local Ethernet ports have detected wired links with computers.
	Blinking	Data is being transmitted or received.
	Off	No link is detected on these ports.
WAN	Solid green	The Ethernet WAN port has detected an active link.
	Blinking	Data is being transmitted or received.
	Off	No link is detected on these ports.
4G LTE	Solid blue	The router is in 4G LTE coverage.
	Off	No coverage is detected.

Table 1. LED descriptions (continued)

LED	Activity	Description
Signal Quality	Solid blue	Excellent coverage detected.
	Solid green	Good coverage detected.
	Solid red	Low coverage detected.
	Off	No coverage detected.
Restore Factory Settings	Locate the small hole outlined in red on the side of the router. Insert a paperclip into the hole and press for 6 seconds. Pressing the **Restore Factory Settings** button causes the Power LED to blink briefly. After the button is held down for more than 6 seconds, the Power LED flashes amber, and then turns green as the router resets to the factory defaults.	

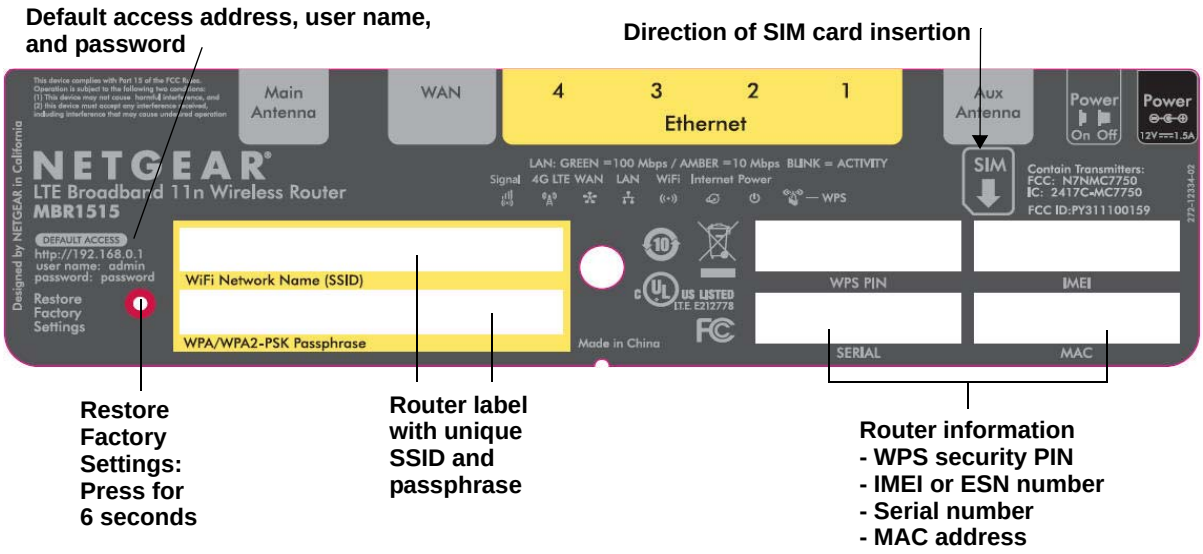
Router Back Panel

The back panel of the router contains port connections.



Router Label

The label on the side of the router shows the router's MAC address, serial number, security PIN, IMEI or ESN number, and factory default login information. It also contains the SSID and passphrase that are unique to each router.



Log In to Your Router

The router is preinstalled with an active SIM card and works out of the box. No setup is required for connecting to a 4G network.

Use your web browser to log in to the router to view or change its settings. Links to knowledge base and documentation are also available on the router main menu.

Note: Your computer must be configured for DHCP. For help configuring DHCP, refer to the documentation that came with your computer.

When you have logged in and do not click **Logout**, after 5 minutes of no activity the router automatically logs you out.

➢ **To log in to the router:**

1. Type **http://www.routerlogin.net** in the address field of your browser, and then press **Enter** to display the login window.

2. Enter **admin** for the user name and your password (or the default, **password**).

   For information about how to change the password, see *Change the Built-In Password* on page 48.

Note: If you do not remember your password, you can restore the router to its factory default settings, which resets the password. See *Factory Default Settings* on page 83.

3. The following screen appears:
   - **Firmware Upgrade Assistant screen**. The Firmware Upgrade Assistant screen displays unless the Check for Updated Firmware Upon Log-in check box is cleared.

Note: You can disable this automatic checking and updating feature during future logins by clearing the **Check for Updated Firmware Upon Log-in** check box, but NETGEAR recommends that you keep this feature enabled to ensure that your router is using the latest updated firmware.

Firmware Upgrade Assistant
The router is checking the NETGEAR server to see if updated firmware available for your router.
This could take up to 90 seconds, please wait...
Check for Updated Firmware Upon Log-in
Cancel

- **Router Status screen**. The Router Status screen displays the current router connection status. See *Router Status* on page 42.

4. You can manually configure the router settings. See *Manually Configure Your Internet Settings* on page 13.

Manually Configure Your Internet Settings

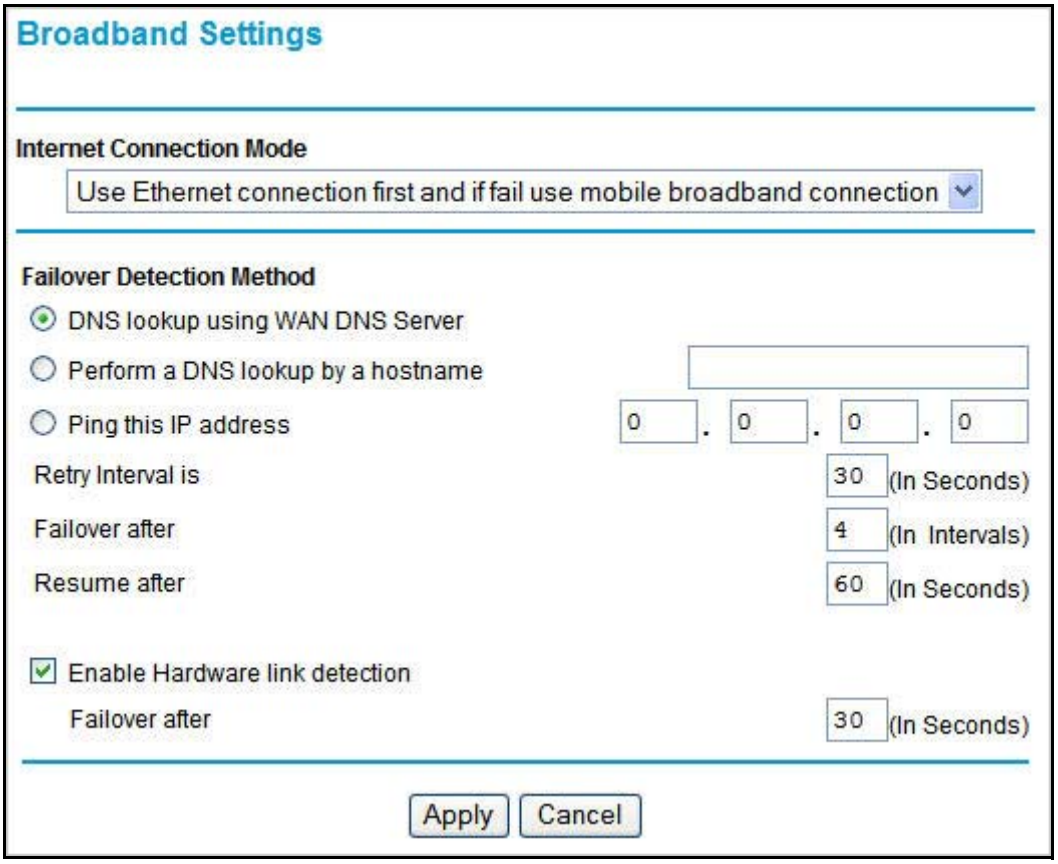
For you to connect to the network, an active broadband service account is required. Contact your ISP for your user name, password, and the network name. You must also configure some or all of the settings described in the following sections, depending on how you have chosen to connect to the Internet:

- *Broadband Settings* on page 13.
- *Mobile Broadband Settings* on page 15 (not required if using Ethernet connection only).
- *Ethernet Broadband Settings* on page 17 (not required if using mobile broadband connection only).

Broadband Settings

➢ **To manually configure your broadband Internet settings:**

1. Log in to the router as described in *Log In to Your Router* on page 11.
2. From the main menu, select **Broadband Settings**.



3. Adjust the settings as needed based on your Internet connection. The fields in this screen are described in *Table 2*.
4. The following buttons are available:

- **Apply**. Apply the changes that you made.
- **Cancel**. Discard changes.

Table 2. Internet connection settings

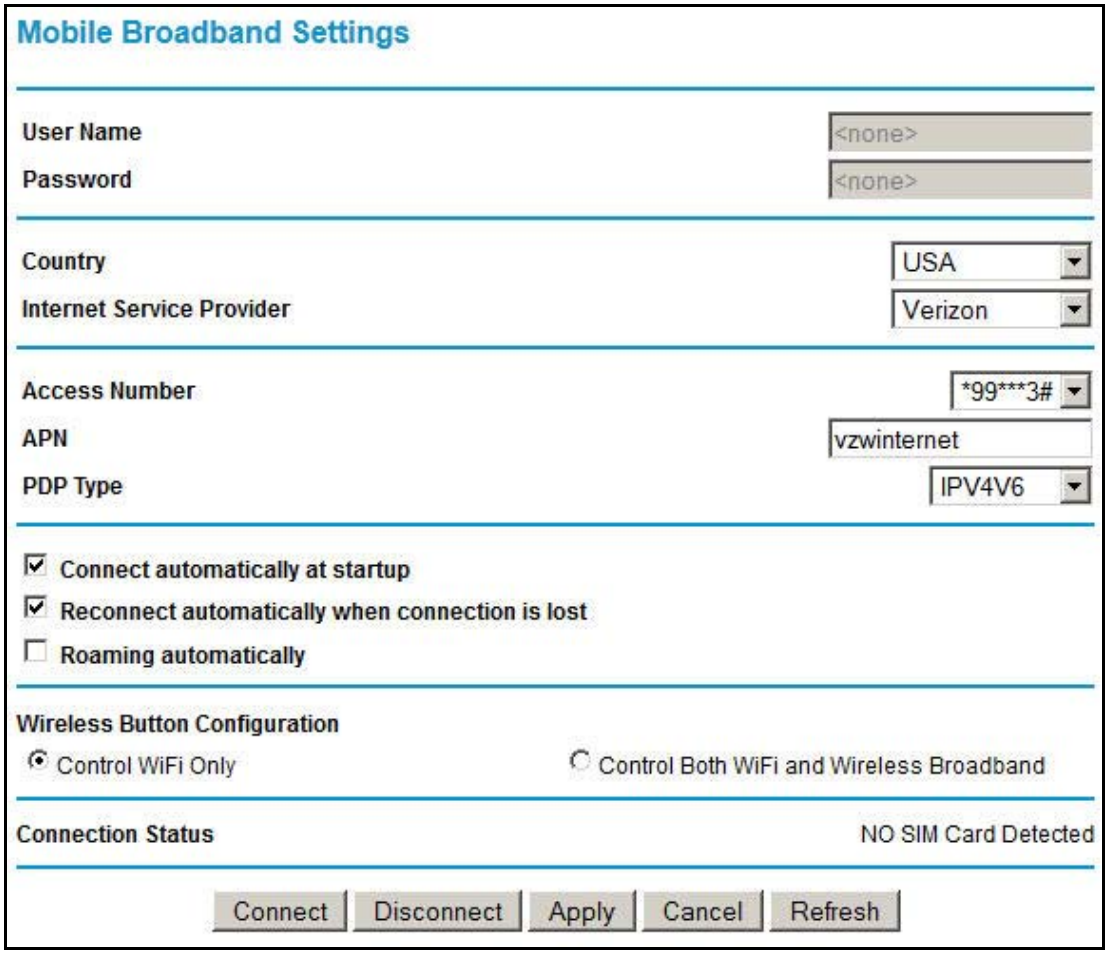
Fields and Check Boxes	Description
Internet Connection Mode	The choices are: • Always use an Ethernet connection • Use Ethernet connection first and if fail use mobile broadband connection • Always use mobile broadband connection (default)
Failover Detection Method[1]	Select the failover method and enter the related information: • DNS lookup using WAN DNS Server • Perform a DNS lookup by a hostname • Ping this IP address
Retry Interval is[1]	Enter the retry interval.
Failover after[1]	Enter how many retry attempts the modem should make before failing over.
Resume after[1]	Enter how long the modem should wait for primary link to be stabilized before resuming use of the primary link.
Enable Hardware link detection	Enter when the modem should fail over when the Ethernet link is dropped. This detection is independent of the DNS / ping detection methods.

*1. This field is available only when the Internet connection mode is **Use Ethernet first and if fail use mobile broadband connection.***

Mobile Broadband Settings

➢ **To manually configure your mobile broadband Internet settings:**

1. Log in to the router as described in *Log In to Your Router* on page 11.
2. From the main menu, select **Mobile Broadband Settings**.



3. Adjust the settings as needed based on your Internet connection. The fields in this screen are described in *Table 3*.
4. Available buttons are:
   - **Connect**. Manually connect to the network.
   - **Disconnect**. Disconnect from the current network.
   - **Apply**. Apply the changes that you made.
   - **Cancel**. Discard changes.
   - **Refresh**. Update the connection status.

Table 3. Mobile Broadband settings

Fields and Check Boxes	Description
User Name	Internet account login user name.
Password	Internet account password for authentication.
Country	Select **User Defined** from the drop-down list.
Internet Service Provider	Select **User Defined** from the drop-down list.
Access Number	The remote site's phone number.
PIN code	Pin code of the SIM card, where applicable.
APN	Access point name.
PDP type	Select the type of packet data protocol: • **IP** • **PDP-IP** • **PPP** • **PPP-IP**
Connect automatically at startup	When this check box is selected, the modem automatically connects to the network when powered up. This setting should be selected after login information is provided.
Reconnect automatically when connection is lost	When this check box is selected, the modem attempts to reconnect to the network when the connection is lost. Under normal situations, this setting should be selected.
Roaming automatically	When this check box is checked, the unit might roam to any available operator in range and might incur roaming charges.
Wireless Button Configuration	Select the option to determine the behavior of the Wireless On/Off button on the front panel when it is pressed. • **Control WiFi Only**. Pressing the button toggles the WiFi function. If WiFi is turned on, pressing the button turns off the WiFi. Pressing it again turns on the WiFi. This function is available only if the WiFi function is enabled. The wireless broadband function is unaffected. • **Control Both WiFi and Wireless Broadband**. Pressing the button toggles both the WiFi function and wireless broadband at the same time. If WiFi is turned on, pressing the button turns off the WiFi. At the same time, the wireless broadband connection is disconnected. If you press the button again, WiFi is turned on and the router attempts to reestablish the wireless broadband connection. Depending on the coverage, wireless broadband coverage might or might not be connected successfully.
Connection status	Current mobile connection status.

Ethernet Broadband Settings

➢ **To manually configure your Ethernet Broadband Internet settings:**

1. Log in to the router as described in *Log In to Your Router* on page 11.
2. From the main menu, select **Ethernet Broadband Settings**.

   The following question displays at the top of the screen:

   Select the option based on the type of account you have with your ISP.

   - If you need to enter login information every time you connect to the Internet, or you have a PPPoE account with your ISP, select **Yes**.
   - Otherwise, select **No**.

   Then fill out the appropriate screen.

   For details, see:

   step •, Login required on page 17

   or

   step •, Login not required on page 19.

Note: If you have installed PPP software such as WinPoET (from Earthlink) or Enternet (from PacBell), then you have PPPoE. Select **Yes**. After selecting Yes and configuring your router, you do not need to run the PPP software on your computer to connect to the Internet.

   - Login required

     Adjust the settings as needed based on your Internet connection. The fields in this screen are described in *Table 4*.

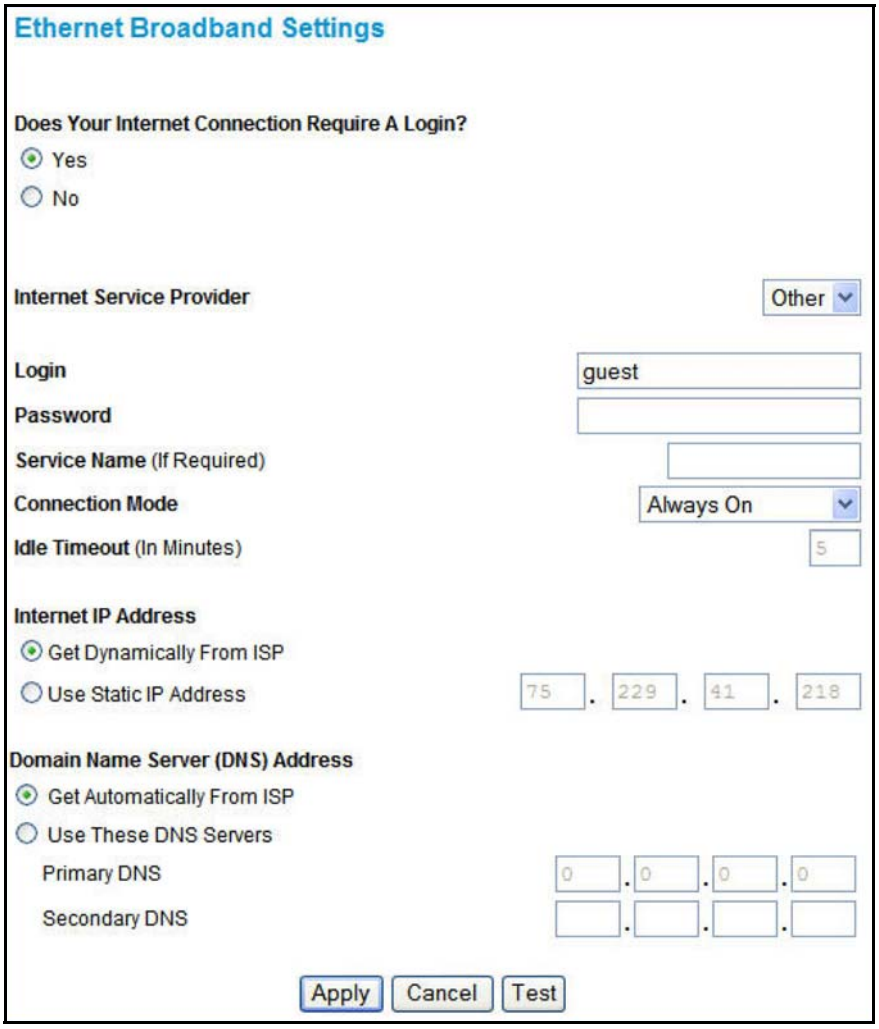


Table 4. Ethernet broadband settings when login required

Fields and Check Boxes	Description
Internet Service Provider	Select the service provided by your ISP. Other (PPPoE) is the most common.
Login	This login name is usually the name that you use in your email address. For example, if your main mail account is JerAB@ISP.com, then type JerAB in this field. Some ISPs (such as Mindspring, Earthlink, and T-DSL) require that you use your full email address when you log in. If your ISP requires your full email address, then type it in the Login field.
Password	Type the password that you use to log in to your ISP.
Service Name (If Required)	If your ISP provided a service name, enter it here. Otherwise, this field can be left blank.

Table 4. Ethernet broadband settings when login required (continued)

Fields and Check Boxes	Description
Connection Mode	Set the connection mode to **Dial on Demand**, **Always On**, or **Manually Connect**. • With the default setting, Dial on Demand, a PPPoE connection automatically starts when there is outbound traffic to the Internet, and it automatically terminates if the connection is idle based on the value in the Idle Timeout field. • When the connection mode is set to Always On, the PPPoE connection automatically starts when the computer boots up, but the connection does not time out. The router keeps trying to bring up the connection after it is disconnected for some reason. • If you select Manually Connect, you must go to the Router Status screen and click the **Connect** button to connect to the Internet. The manual connection does not time out, and you have to click the **Disconnect** button on the Router Status screen to disconnect it.
Idle Timeout (In Minutes)	An idle Internet connection will be terminated after this time period. If this value is zero (0), then the router keeps the connection alive by reconnecting immediately whenever the connection is lost.
Internet IP Address	If you log in to your service or your ISP did not provide you with a fixed IP address, the router finds an IP address for you automatically when you connect. Select **Get Dynamically from ISP**. If you have a fixed (static, permanent) IP address, your ISP has provided you with an IP address. Select **Use Static IP Address** and type the IP address.
Domain Name Server (DNS) Address	The DNS server is used to look up site addresses based on their names. • If your ISP gave you one or two DNS addresses, select **Use These DNS Servers** and type the primary and secondary addresses. • Otherwise, select **Get Automatically From ISP**. **Note**: If you get “Address not found” errors when you go to a website, it is likely that your DNS servers are not set up correctly. You should contact your ISP to get DNS server addresses.

- Login not required

  Adjust the settings as needed based on your Internet connection. The fields in this screen are described in *Table 5*.

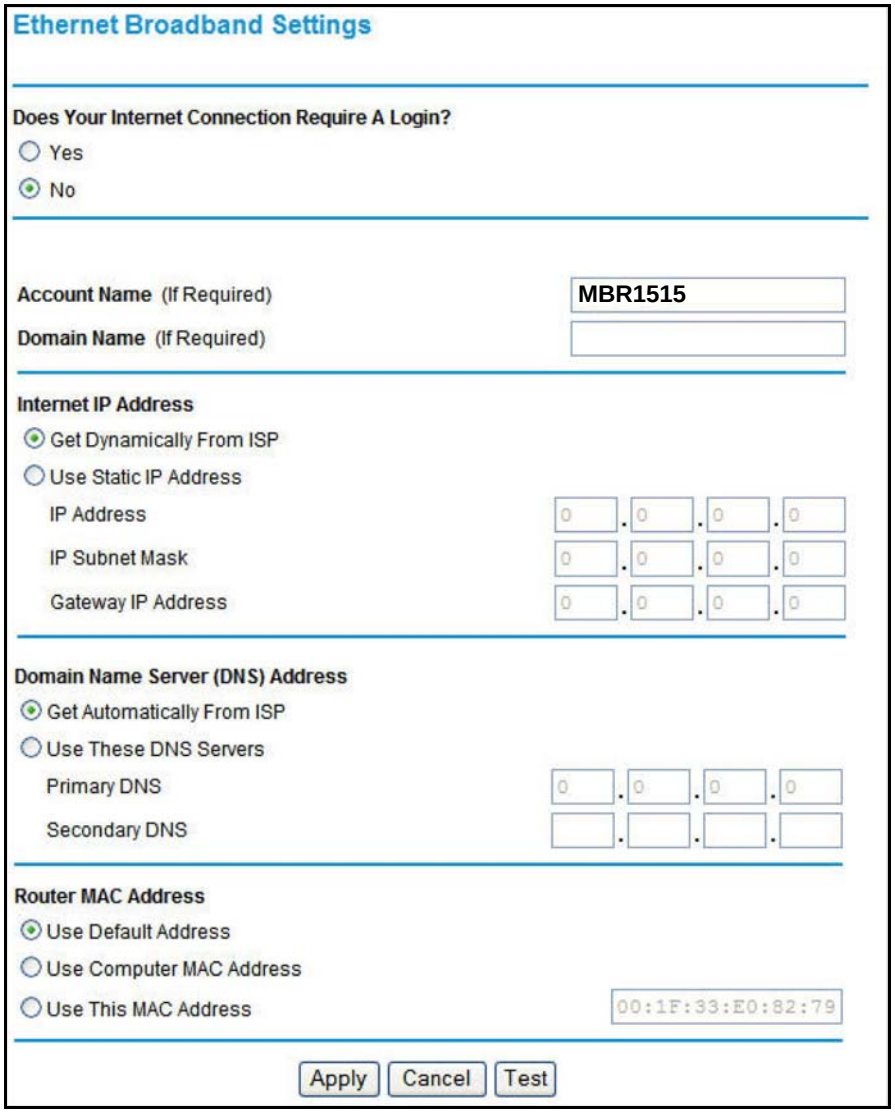

Ethernet Broadband Settings
Does Your Internet Connection Require A Login?
Yes
No
Account Name (If Required)
MBR1515
Domain Name (If Required)
Internet IP Address
Get Dynamically From ISP
Use Static IP Address
IP Address
IP Subnet Mask
Gateway IP Address
Domain Name Server (DNS) Address
Get Automatically From ISP
Use These DNS Servers
Primary DNS
Secondary DNS
Router MAC Address
Use Default Address
Use Computer MAC Address
Use This MAC Address
00:1F:33:E0:82:79
Apply
Cancel
Test

Table 5. Ethernet broadband settings fields when login not required

Fields and Check Boxes	Description
Account Name (If Required)	This name is also known as the host name or system name. For most users, type your account name or user name in this field. For example, if your main mail account is JerAB@ISP.com, then type JerAB in this field. If your ISP has given you a specific host name, then type it (for example, CCA7324-A).
Domain Name (If Required)	For most users, you can leave this field blank, unless it is required by your ISP. You can type the domain name of your ISP. For example, if your ISP's mail server is mail.xxx.yyy.zzz, you would type xxx.yyy.zzz as the domain name. If you have a domain name given to you by your ISP, type it in this field. (For example, Earthlink Cable might require a host name of home, and Comcast sometimes supplies a domain name.) If you have a cable modem, this setting is usually the workgroup name.
Internet IP Address	If you log in to your service or your ISP did not provide you with a fixed IP address, the router finds an IP address for you automatically when you connect. Select **Get Dynamically From ISP**. If you have a fixed (or static IP) address, your ISP has provided you with the required information. Select **Use Static IP Address** and type the IP address, subnet mask, and gateway IP address into the correct fields. For example: • **IP Address**. 24.218.156.183 • **Subnet Mask**. 255.255.255.0 • **Gateway IP Address**. 24.218.156.1
Domain Name Server (DNS) Address	The DNS server is used to look up site addresses based on their names. • If your ISP gave you one or two DNS addresses, select **Use These DNS Servers** and type the primary and secondary addresses. • Otherwise, select **Get Automatically From ISP**. **Note**: If you get "Address not found" errors when you go to a website, it is likely that your DNS servers are not set up correctly. You should contact your ISP to get DNS server addresses.
Router MAC Address	Your computer's local address is its unique address on your network. This address is also referred to as the computer's MAC (Media Access Control) address. • Usually, select **Use Default MAC Address**. • If your ISP requires MAC authentication, then select either **Use Computer MAC Address** to disguise the router's MAC address with the computer's own MAC address, or **Use This MAC Address** and manually type the MAC address for a different computer. The format for the MAC address is XX:XX:XX:XX:XX:XX. This value might be changed if Use Computer MAC Address is selected once a value has already been set in the Use This MAC Address selection.

3. The following buttons are available:
   - **Apply**. Apply the changes that you made.
   - **Cancel**. Discard changes.
   - **Test**. Connect to the NETGEAR website. If you connect successfully, your settings work, and you can click **Logout** to exit these screens.

Wireless Network Configuration

2

For a wireless connection, the SSID (also known as the wireless network name), and the wireless security settings must be the same for the router and wireless computers or wireless adapters. NETGEAR strongly recommends that you use wireless security.

The router is preconfigured with WPA-PSK/WPA2-PSK mixed mode and uses a unique SSID and passphrase. This information is printed on the label on the bottom of the router. Use this information to set up your WiFi computer and devices.

This chapter addresses the following:

- *Plan Your Wireless Network*
- *Manually Configure Your Wireless Settings*
- *Use Push 'N' Connect (WPS) to Configure Your Wireless Network*
- *SIM Card PIN Code*

Note: Computers can connect wirelessly at a range of several hundred feet. If you do not use wireless security, others outside your immediate area can access your network.

Plan Your Wireless Network

For compliance and compatibility between similar products in your area, the operating channel and region must be set correctly.

To configure the wireless network, you can either specify the wireless settings, or you can use Wi-Fi Protected Setup (WPS) to automatically set the SSID and implement WPA/WPA2 security.

- To manually configure the wireless settings, you must know the following:
  - SSID. The default SSID for the router is printed on the product label.
  - The wireless mode (802.11n, 802.11g, or 802.11b) that each wireless adapter supports.
  - Wireless security option. To successfully implement wireless security, check each wireless adapter to determine which wireless security option it supports.

  See *Manually Configure Your Wireless Settings* on page 26.
- Push 'N' Connect (WPS) implements WPA/WPA2 wireless security on the router and your wireless computer or device at the same time. The wireless computer or device must be compatible with WPS.

  See *Use Push 'N' Connect (WPS) to Configure Your Wireless Network* on page 29.

Wireless Placement and Range Guidelines

The range of your wireless connection can vary based on the physical placement of the router. The latency, data throughput performance, and notebook power consumption of wireless adapters also vary depending on your configuration choices.

For best results, place your router according to the following guidelines:

- Near the center of the area in which your computers operate.
- In an elevated location, such as a high shelf, where the wirelessly connected computers have line-of-sight access (even if through walls).
- Away from sources of interference, such as microwave ovens, and 2.4 GHz cordless phones (see *Interference Reduction Table* on page 91).
- Away from large metal surfaces.
- If you are using multiple access points, it is better if adjacent access points use different radio frequency channels to reduce interference. The recommended channel spacing between adjacent access points is 5 channels (for example, use Channels 1 and 6, or 6 and 11).

The time it takes to establish a wireless connection can vary depending on both your security settings and placement. WEP connections can take slightly longer to establish. Also, WEP encryption can consume more battery power on a notebook computer.

Wireless Security Options

Indoors, computers can connect over 802.11n wireless networks at a maximum range of up to 300 feet. Such distances can allow others outside your immediate area to access your network.

Unlike wired network data, your wireless data transmissions can extend beyond your walls and can be received by anyone with a compatible adapter. For this reason, use the security features of your wireless equipment. The LTE Broadband 11n Wireless Router provides highly effective security features, which are covered in detail in this chapter. Deploy the security features appropriate to your needs.

Each router is preconfigured for WPA-PSK/WPA2-PSK mixed-mode, and comes with a unique SSID and passphrase for each router.

There are several ways you can enhance the security of your wireless network:

- **Restrict access based on MAC address**. You can allow only trusted computers to connect so that unknown computers cannot wirelessly connect to the router. Restricting access by MAC address adds an obstacle against unwanted access to your network, but the data broadcast over the wireless link is fully exposed.
- **Turn off the broadcast of the wireless network name (SSID)**. If you disable broadcast of the SSID, only devices that have the correct SSID can connect. Disabling the broadcast nullifies the wireless network “discovery” feature of some products, such as Windows XP, but the data is still exposed.
- **WEP**. Wired Equivalent Privacy (WEP) data encryption provides data security. WEP Shared Key authentication and WEP data encryption block all but the most determined eavesdropper. This data encryption mode has been superseded by WPA-PSK and WPA2-PSK.
- **WPA-PSK (TKIP), WPA2-PSK (AES)**. Wi-Fi Protected Access (WPA) using a pre-shared key to authenticate and generate the initial data encryption keys. The strong authentication along with dynamic per frame rekeying of WPA makes it almost impossible to compromise.

Manually Configure Your Wireless Settings

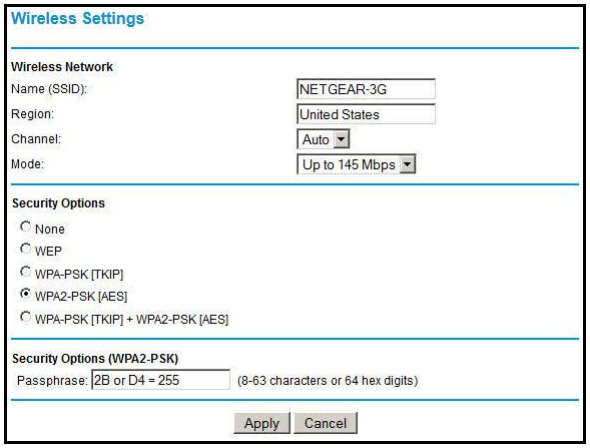
Note: If you use a wireless computer to change the wireless network name (SSID) or wireless security, you are disconnected when you click Apply. To avoid this occurrence, connect your computer directly to the router with an Ethernet cable when you make these changes.

➢ **To view or manually configure the wireless settings:**

1. Log in to the router as described in *Log In to Your Router* on page 11.
2. Select **Wireless Settings** from the main menu.

   The settings for this screen are explained in the following table.
3. For initial configuration and test, leave the other settings unchanged.
4. To save your changes, click **Apply**.
5. Configure and test your computers for wireless connectivity.

   Set up your wireless computers with the same SSID and wireless security settings as those on your router. Check that they have a wireless link and are able to obtain an IP address by DHCP from the router. If there is interference, adjust the channel.



Settings		Description
Wireless Network	Name (SSID)	The SSID is also known as the wireless network name. Enter a 32-character (maximum) name in this field. This field is case-sensitive. When there is more than one wireless network, SSIDs provide a means for separating the traffic. To join a network, a wireless computer or device must use the SSID.
	Region	The location where the router is used (United States).
	Channel	The wireless channel that is used by the gateway. The default is **Auto**. Do not change the channel unless you experience interference (indicated by lost connections or slow data transfers). If this interference happens, you might need to try different channels to see which works best.
	Mode	The default is Up to 145 Mbps.

Settings		Description
Security Options	None	Use this setting to establish wireless connectivity before implementing wireless security. NETGEAR strongly recommends that you implement wireless security.
	WEP	Use encryption keys and data encryption for data security. You can select 64-bit or 128-bit encryption. See *Configure WEP* on page 27.
	WPA-PSK (TKIP)	Allow only computers configured with WPA to connect to the router. See *Configure WPA, WPA2, or WPA + WPA2* on page 28.
	WPA2-PSK (AES)	Allow only computers configured with WPA2 to connect to the router. See *Configure WPA, WPA2, or WPA + WPA2* on page 28.
	WPA-PSK (TKIP) + WPA2-PSK (AES)	Allow computers configured with either WPA-PSK or WPA2-PSK security to connect to the router. See *Configure WPA, WPA2, or WPA + WPA2* on page 28.

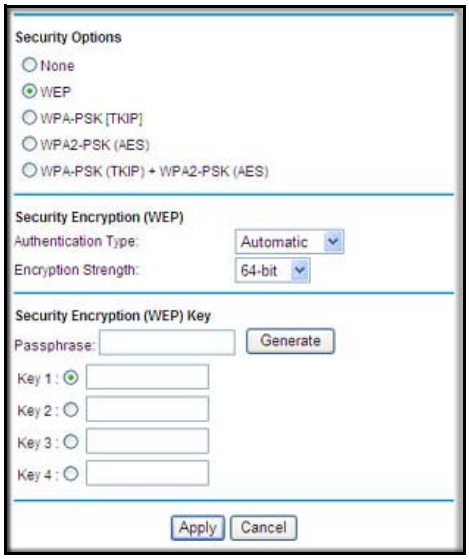
Configure WEP

Note: If you use a wireless computer to configure wireless security settings, you are disconnected when you click Apply. Reconfigure your wireless computer to match the new settings, or access the router from a wired computer to make further changes.

➢ **To configure WEP data encryption:**

1. Log in to the router as described in *Log In to Your Router* on page 11.
2. From the main menu, select **Wireless Settings** to display the Wireless Settings screen.
3. In the Security Options section, select the **WEP** (Wired Equivalent Privacy) radio button:
4. Select the Authentication Type setting: **Automatic**, **Open System**, or **Shared Key**. The default is **Open System**.

   Note: *The authentication is separate from the data encryption. You can select authentication that requires a shared key but still leaves data transmissions unencrypted. Security is stronger if you use both the shared key and WEP encryption settings.*



5. Select the Encryption Strength setting:
   - **64-bit**. Enter 10 hexadecimal digits (any combination of 0–9, a–f, or A–F).

- **128-bit**. Enter 26 hexadecimal digits (any combination of 0–9, a–f, or A–F).

6. Enter the encryption keys. You can manually or automatically program the four data encryption keys. These values must be identical on all computers and access points in your network:
   - **Passphrase**. To use a passphrase to generate the keys, enter a passphrase, and click **Generate**. This procedure automatically creates the keys. Wireless stations must use the passphrase or keys to access the router.

     Note: *Not all wireless adapters support passphrase key generation.*

   - **Key 1–Key4**. These values are *not* case-sensitive. You can manually enter the four data encryption keys. These values must be identical on all computers and access points in your network. Enter 10 hexadecimal digits (any combination of 0–9, a–f, or A–F).
7. Select which of the four keys is the default.

   Data transmissions are always encrypted using the default key. The other keys can be used only to decrypt received data. The four entries are disabled when WPA-PSK or WPA authentication is selected.
8. Click **Apply** to save your settings.

Configure WPA, WPA2, or WPA + WPA2

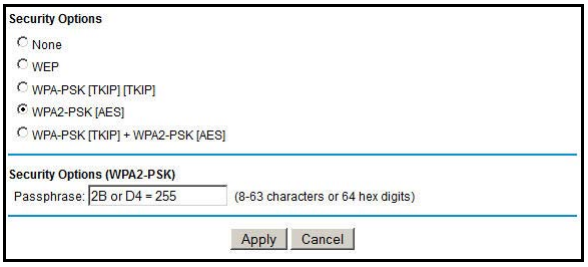
Both WPA and WPA2 provide strong data security. WPA with TKIP is a software implementation that can be used on Windows systems with Service Pack 2 or later. WPA2 with AES is a hardware implementation; see your device documentation before implementing it. Consult the product documentation for your wireless adapter for instructions for configuring WPA settings.

Note: If you use a wireless computer to configure wireless security settings, you are disconnected when you click Apply. If you are disconnected, reconfigure your wireless computer to match the new settings, or access the router from a wired computer to make further changes.

➢ **To configure WPA or WPA2 in the router:**

1. Log in to the router as described in *Log In to Your Router* on page 11.
2. Select **Wireless Settings** from the main menu.

3. On the Wireless Setting screen, select the radio button for the WPA or WPA2 option of your choice.



4. For WPA-PSK or WPA2-PSK, enter the passphrase.
5. To save your settings, click **Apply**.

Use Push 'N' Connect (WPS) to Configure Your Wireless Network

To use Push 'N' Connect, your wireless computers or devices must support Wi-Fi Protected Setup (WPS). Compatible equipment usually has the WPS symbol on it. Use WPS to configure the network name (SSID) and set up WPA/WPA2 wireless security for the router and the wireless computer or device at the same time.

WPS considerations:

- NETGEAR's Push 'N' Connect feature is based on the WPS standard. All other Wi-Fi-certified and WPS-capable products should be compatible with NETGEAR products that implement Push 'N' Connect.
- If your wireless network includes a combination of WPS-capable devices and Non-WPS-capable devices, NETGEAR suggests that you set up your wireless network and security settings manually first, and use WPS only for adding WPS-capable devices.

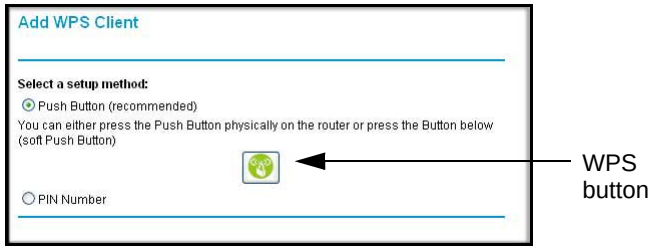
WPS Button Entry

Any wireless computer or wireless adapter that connects to the router wirelessly is a client. The client must support a WPS button, and must have a WPS configuration utility, such as the NETGEAR Smart Wizard or Atheros Jumpstart.

➢ **To use the router WPS button to add a WPS client:**

1. Log in to the router as described in *Log In to Your Router* on page 11.
2. On the router main menu, select **Add WPS Client**, and then click **Next**.

   By default, the **Push Button (recommended)** radio button is selected.

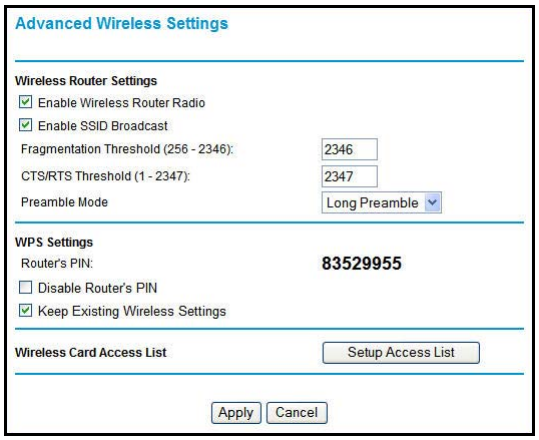

Add WPS Client
Select a setup method:
Push Button (recommended)
You can either press the Push Button physically on the router or press the Button below (soft Push Button)
PIN Number
WPS button

3. Either click the onscreen button or press the **WPS** button on the front of the router.

   The router tries to communicate with the client (the computer that wants to join the network) for 2 minutes.

4. Go to the client wireless computer, and run a WPS configuration utility. Follow the utility's instructions to click a **WPS** button.
5. Go back to the router screen to check for a message.

   The router WPS screen displays a message confirming that the client was added to the wireless network. The router generates an SSID and implements WPA/WPA2 wireless security. The router keeps these wireless settings unless you change them, or you clear the **Keep Existing Wireless Settings** check box in the Advanced Wireless Settings screen.



6. Note the new SSID and WPA/WPA2 password for the wireless network. You can view these settings in the Wireless Settings screen. See *Manually Configure Your Wireless Settings* on page 26.

To access the Internet from any computer connected to your router, launch a browser such as Microsoft Internet Explorer or Mozilla Firefox. You should see the router's Internet LED blink, indicating communication with the ISP.

Note: If no WPS-capable client devices are located during the 2-minute time frame, the SSID does not change, and no security is set up.

WPS PIN Entry

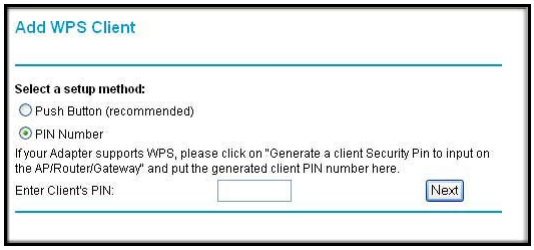
Any wireless computer or device that connects to the router wirelessly is a client. The client must support a WPS PIN, and must have a WPS configuration utility, such as the NETGEAR Smart Wizard or Atheros Jumpstart.

The first time you add a WPS client, make sure that the **Keep Existing Wireless Settings** check box on the Advanced Wireless WPS Settings screen is cleared. This setting is the default setting for the router and allows it to generate the SSID and WPA/WPA2 security settings when it implements WPS. After WPS is implemented, the router automatically selects this check box so that your SSID and wireless security settings stay the same if other WPS devices are added later.

➢ **To use a PIN to add a WPS client:**

1. Log in to the router as described in *Log In to Your Router* on page 11.

2. On the router main menu, select **Add WPS Client** (computers that connect wirelessly to the router are clients), and then click **Next**. The Add WPS Client screen displays.


Add WPS Client
Select a setup method:
Push Button (recommended)
PIN Number
If your Adapter supports WPS, please click on "Generate a client Security Pin to input on the AP/Router/Gateway" and put the generated client PIN number here.
Enter Client's PIN:
Next

3. Select the **PIN Number** radio button.
4. Go to the client wireless computer. Run a WPS configuration utility. Follow the utility's instructions to generate a PIN. Take note of the client PIN.
5. In the router Add WPS Client screen, enter the client PIN number, and then click **Next**.
   - The router tries to communicate with the client for 4 minutes. If no WPS clients connect during this time, the router wireless settings do not change.
   - The router WPS screen confirms that the client was added to the wireless network. The router generates an SSID and implements WPA/WPA2 wireless security.
6. Note the new SSID and WPA/WPA2 password for the wireless network. You can view these settings in the Wireless Settings screen. See *Manually Configure Your Wireless Settings* on page 26.

To access the Internet from any computer connected to your router, launch an Internet browser such as Mozilla Firefox. You should see the router's Internet LED blink.

Add Wireless Computers That Do Not Support WPS

If you set up your network with WPS, and now you want to add a computer that does not support WPS, you must manually configure that computer. For information about how to view the wireless settings for the router, see *Manually Configure Your Wireless Settings* on page 26.

Because WPA randomly creates the SSID and WPA/WPA2 keys, they might be difficult to type or remember (that is one reason why the network is so secure). You can change the wireless settings so that they are easier for you to remember. If you do that, then you need to set up the WPS-compatible computers again.

Note: Making these changes disconnects all wireless computers from network. You then have to set them up with the new wireless settings.

➢ **To change wireless settings for the network:**

1. Use an Ethernet cable to connect a computer to the router. That way you are not disconnected when you change the wireless settings.
2. Log in to the router and select **Wireless Settings** (see *Manually Configure Your Wireless Settings* on page 26).
3. Make the following changes:
   - Change the wireless network name (SSID) to a meaningful name.

- On the WPA/PSK + WPA2/PSK section of the screen, select a passphrase.
- Make sure that the **Keep Existing Wireless Settings** check box is selected in the Advanced Wireless WPS Settings screen so that your new settings are not erased if you use WPS.

4. Click **Apply** so that your changes take effect. Write down your settings.

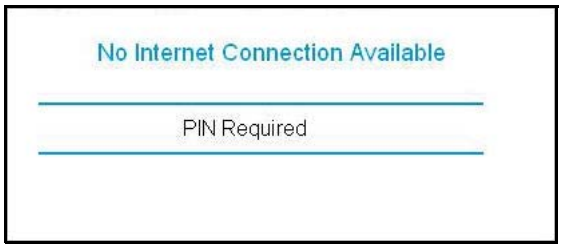
   All existing wireless clients are disassociated and disconnected from the router.

5. For the non-WPS devices that you want to connect, open the networking utility and follow the utility's instructions to enter the security settings that you selected in Step 3 (the SSID, WPA/PSK + WPA2/PSK security method, and passphrase).
6. For the WPS devices that you want to connect, follow the procedure in *WPS Button Entry* on page 29 or *WPS PIN Entry* on page 30.

   The settings that you configured in Step 3 are broadcast to the WPS devices so that they can connect to the router.

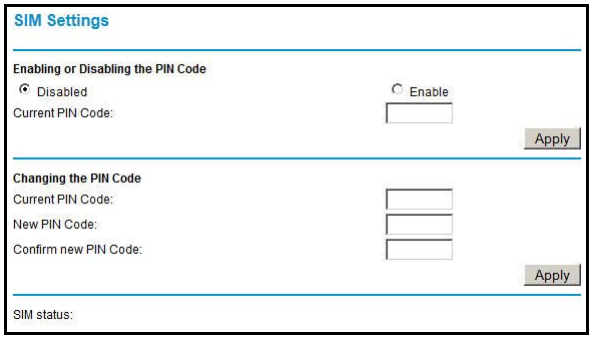
SIM Card PIN Code

Some SIM cards have a PIN code associated with them. Without the PIN code, you are not able to access the Internet. This status appears when a PIN is required but has not yet been entered.



➢ **To enter the PIN code:**

1. Log in to the router and select **Advanced > SIM Settings** from the main menu.
2. Enter the PIN code.



Filter Content

3

This chapter describes how to use the basic firewall features of the router to protect your network.

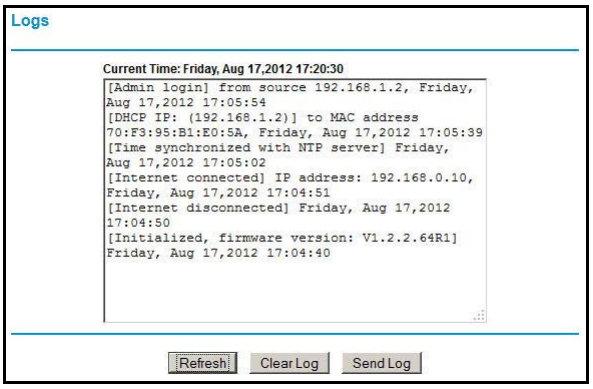
- *View, Select, and Save Logged Information*
- *Block Sites and Keywords*
- *Block Services*
- *Scheduling*
- *Enable Security Event Email Notification*

> **Note:** For information about the advanced content filtering features port forwarding and port triggering, see *Port Forwarding and Port Triggering* on page 58.

View, Select, and Save Logged Information

The router logs security-related events such as denied incoming service requests, hacker probes, and administrator logins. If you enabled content filtering in the Block Sites screen, the Logs screen can show you when someone on your network tries to access a blocked site.

On the main menu, select **Content Filtering > Logs** to display this screen:


Logs
Current Time: Friday, Aug 17,2012 17:20:30
[Admin login] from source 192.168.1.2, Friday, Aug 17,2012 17:05:54
[DHCP IP: (192.168.1.2)] to MAC address 70:F3:95:B1:E0:5A, Friday, Aug 17,2012 17:05:39
[Time synchronized with NTP server] Friday, Aug 17,2012 17:05:02
[Internet connected] IP address: 192.168.0.10, Friday, Aug 17,2012 17:04:51
[Internet disconnected] Friday, Aug 17,2012 17:04:50
[Initialized, firmware version: V1.2.2.64R1] Friday, Aug 17,2012 17:04:40
Refresh
Clear Log
Send Log

Note: You can enable email notification to receive these logs in an email message. See *Enable Security Event Email Notification* on page 40.

Log entries and action buttons are described in the following table.

Field or Button	Description
Current time	The date and time the log entry was recorded.
Description or action	The type of event and what action was taken, if any.
Source IP	The IP address of the initiating device for this log entry.
Source port and interface	The service port number of the initiating device, and whether it originated from the LAN or WAN.
Destination	The name or IP address of the destination device or website.
Destination port and interface	The service port number of the destination device, and whether it is on the LAN or WAN.
Refresh button	Refresh the log screen.
Clear Log button	Clear the log entries.
Send Log button	Email the log immediately.

Log Message Examples

Following are examples of log messages. In all cases, the log entry shows the time stamp as Day, Year-Month-Date Hour:Minute:Second.

Activation and Administration

This entry indicates a power-up or reboot with initial time entry.

```
Tue, 2002-05-21 18:48:39 - NETGEAR activated
```

This entry shows an administrator logging in to and out from IP address 192.168.0.2.

```
Tue, 2002-05-21 18:55:00 - Administrator login successful - IP:192.168.0.2
Thu, 2002-05-21 18:56:58 - Administrator logout - IP:192.168.0.2
```

This entry shows a time-out of the administrator login.

```
Tue, 2002-05-21 19:00:06 - Login screen timed out - IP:192.168.0.2
```

This entry shows when the log was emailed.

```
Wed, 2002-05-22 22:00:19 - Log emailed
```

Dropped Packets

These entries show an inbound FTP (port 21) packet, User Datagram Protocol (UDP) packet (port 6970), and Internet Control Message Protocol (ICMP) packet (port 0) being dropped as a result of the default inbound rule, which states that all inbound packets are denied.

```
Wed, 2002-05-22 07:15:15 - TCP packet dropped - Source:64.12.47.28,4787,WAN
- Destination:134.177.0.11,21,LAN - [Inbound Default rule match]
Sun, 2002-05-22 12:50:33 - UDP packet dropped - Source:64.12.47.28,10714,WAN
- Destination:134.177.0.11,6970,LAN - [Inbound Default rule match]
Sun, 2002-05-22 21:02:53 - ICMP packet dropped - Source:64.12.47.28,0,WAN -
Destination:134.177.0.11,0,LAN - [Inbound Default rule match]
```

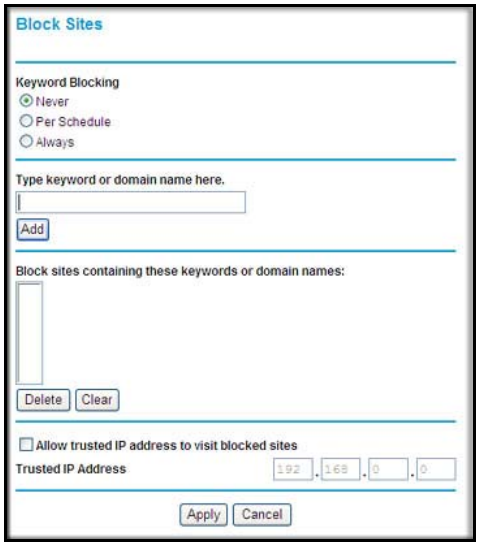
Block Sites and Keywords

The router provides various options for blocking Internet-based content and communications services. With its content filtering feature, the router prevents objectionable content from reaching your computers. You can control access to Internet content by screening for keywords within web addresses. Content filtering options include:

- Keyword blocking of HTTP traffic.
- Outbound service blocking. Limits access from your LAN to Internet locations or services that you specify as off-limits.
- Denial of service (DoS) protection. Detects and thwarts DoS attacks such as Ping of Death, SYN flood, LAND attack, and IP spoofing.
- Blocking unwanted traffic from the Internet to your LAN.

The router allows you to restrict access to Internet content based on web addresses and web address keywords.

1. Log in to the router as described in *Log In to Your Router* on page 11.
2. On the main menu, select **Content Filtering > Block Sites** to display the Block Sites screen:



3. To enable keyword blocking, select one of the following:
   - **Per Schedule**. Turn on keyword blocking according to the settings on the Schedule screen.
   - **Always**. Turn on keyword blocking all the time, independent of the setting in the Schedule screen.
4. Enter a keyword or domain in the Keyword field, click **Add**, and then click **Apply**.

Some examples of keyword applications are shown in the following chart.

Keyword	Result
XXX	Block the URL http://www.badstuf.com/xxx.html.
.com	Only websites with other domain suffixes (such as .edu or .gov) can be viewed.
. (a period)	Block all Internet browsing access.

Up to 32 entries are supported in the keyword list.

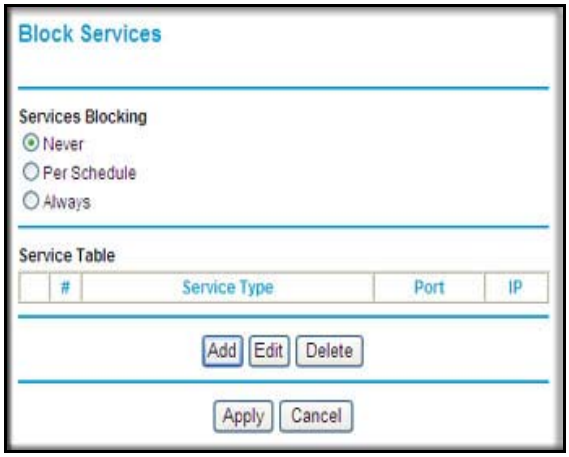
Note: If you block sites, you can set up the router to log attempts to access them. See *View, Select, and Save Logged Information* on page 34.

5. To delete a keyword or domain, select it from the list, click **Delete**, and then click **Apply**.
6. To specify a trusted user, enter that computer's IP address in the Trusted IP Address field, and then click **Apply**.

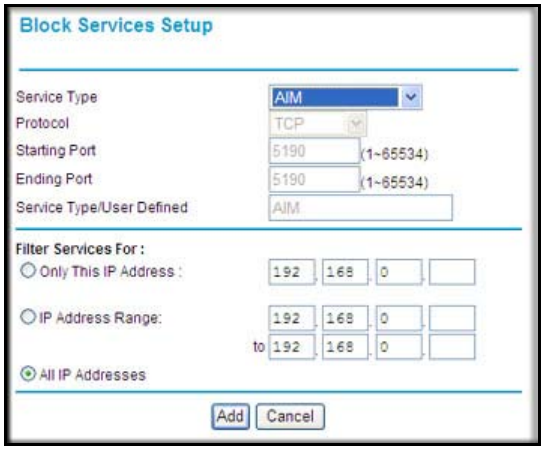
   You can specify one trusted user, which is a computer that is exempt from blocking and logging. Since the trusted user is identified by an IP address, you should configure that computer with a fixed IP address.
7. Click **Apply** to save your settings.

Block Services

1. Log in to the router as described in *Log In to Your Router* on page 11.
2. In the main menu, select **Content Filtering > Block Services** to display this screen:



3. Select one of the following:
   - **Per Schedule**. Turn on keyword blocking according to the settings in the Schedule screen.
   - **Always**. Turn on keyword blocking all the time, independent of the Schedule screen.
4. Click **Add**, and the following screen displays:



5. Either select a service from the Service Type drop-down list, or use the Service/Type User Defined field to create a custom service.
6. Click **Add** to create the service, and it is listed in the Service Table on the Block Services screen.
7. Click **Apply** to save your settings.

Scheduling

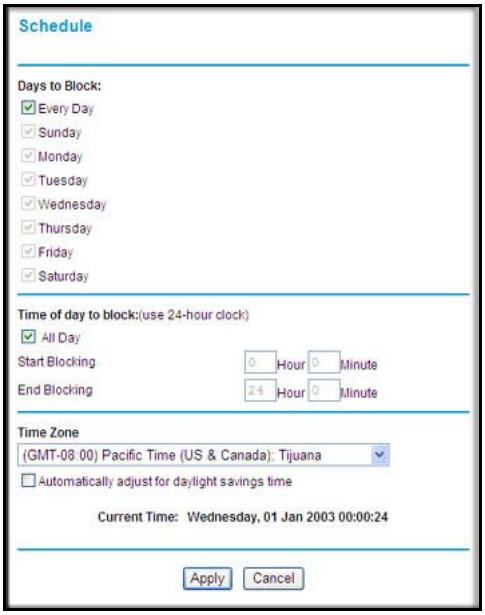
The router uses Network Time Protocol (NTP) to obtain the current time and date from one of several network time servers on the Internet.

Set Your Time Zone

To localize the time for your log entries, you must specify your time zone:

1. Log in to the router as described in *Log In to Your Router* on page 11.
2. On the main menu, select **Content Filtering > Schedule**:
3. Select your time zone. This setting is used for the blocking schedule according to your local time zone and for time-stamping log entries.

   If your time zone is currently in daylight savings time, select the **Automatically adjust for daylight savings time** check box.
4. Click **Apply** to save your settings.



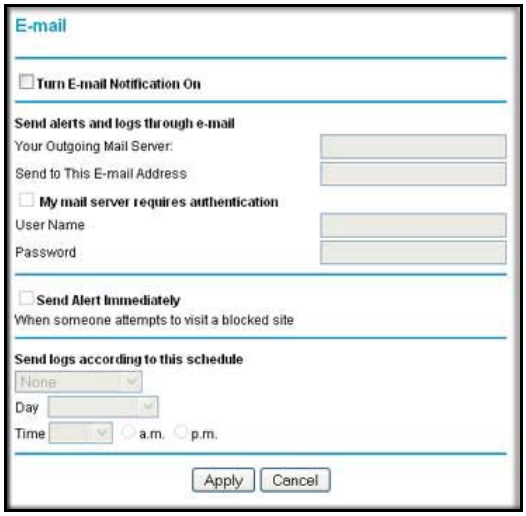
Schedule Firewall Services

If you enabled service blocking in the Block Services screen or port forwarding in the Port Forwarding/Port Triggering screen, you can set up a schedule for when blocking occurs or when access is not restricted.

1. Log in to the router as described in *Log In to Your Router* on page 11.
2. On the main menu, select **Content Filtering > Schedule**. The Schedule screen appears.
3. To block Internet services based on a schedule, select **Every Day**, or select one or more days. If you want to limit access completely for the selected days, select **All Day**. Otherwise, to limit access during certain times for the selected days, fill in the Start Blocking and End Blocking fields.
4. Enter the values in 24-hour time format. For example, 10:30 a.m. would be 10 hours and 30 minutes, and 10:30 p.m. would be 22 hours and 30 minutes. If you set the start time after the end time, the schedule will be effective through midnight the next day.
5. Click **Apply** to save your changes.

Enable Security Event Email Notification

To set up the router so that you can receive logs and alerts by email, select **Content Filtering > E-mail** from the router menu to display the following screen:



➢ **To receive alerts and logs by email:**

1. Select the **Turn E-mail Notification On** check box.
2. Fill in the fields to send alerts and logs through email.
   - **Your Outgoing Mail Server**. Enter the name or IP address of the outgoing SMTP mail server of your ISP (such as mail.myISP.com).
   - **Send to This E-mail Address.** Enter the e-mail address where you want to send the alerts and logs. Use a full email address, such as ChrisXY@myISP.com.
   - **My mail server requires authentication**. Select this check box if you need to log in to your SMTP server to send email. If you select this feature, you must enter the user name and password for the mail server.

   Tip: If you cannot remember this information, check the settings in your email program.

3. Specify when you want the alerts and logs sent:
   - **Send alert immediately**. Select this check box if you would like immediate notification of a significant security event, such as a known attack, port scan, or attempted access to a blocked site.
   - **Send logs according to this schedule**. Specifies how often to send the logs: **Hourly**, **Daily**, **Weekly**, or **When Full**.
   - **Day for sending log**. Specifies which day of the week to send the log. Relevant when the log is sent weekly.
   - **Time for sending log**. Specifies the time of day to send the log. Relevant when the log is sent daily or weekly.

   If the Weekly, Daily, or Hourly option is selected and the log fills up before the specified period, the log is automatically emailed to the specified email address. After the log is sent, it is cleared from the router's memory. If the router cannot email the log file, the log buffer might fill up. In this case, the router overwrites the log and discards its contents.

4. Click **Apply** so that your changes take effect.

Manage Your Network

4

This chapter describes how to perform network management tasks with your LTE Broadband 11n Wireless Router.

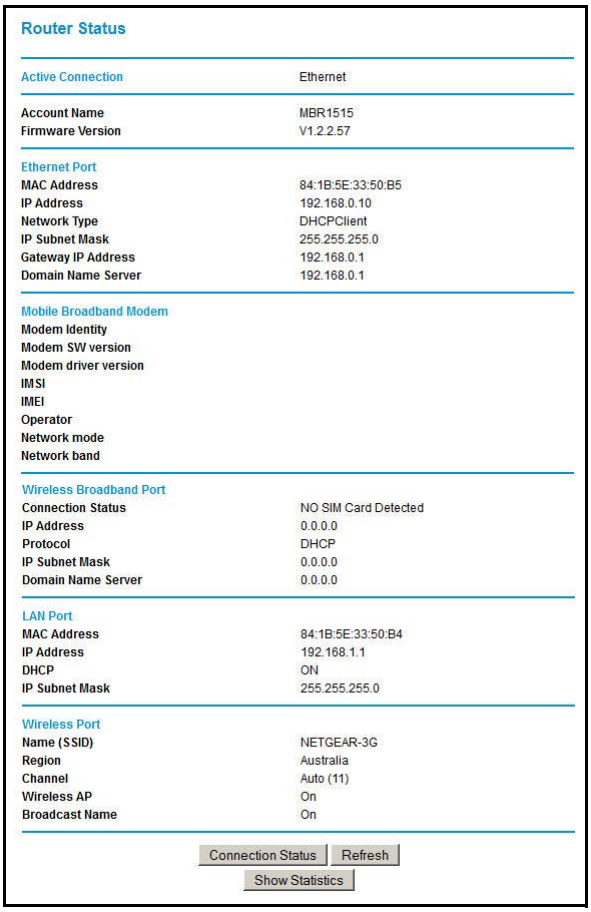
- *Router Status*
- *View Attached Devices*
- *Back Up, Restore, or Erase Your Settings*
- *Protect Access to Your Router*
- *Run Diagnostic Utilities and Reboot the Router*
- *Upgrade the Router Firmware*

Router Status

From the main menu, select **Maintenance > Router Status** to view this screen.

You can use this screen to view the status of the router, to show statistics, or to view the connection status.

- For information about the fields on this screen, see the table that follows the figure.
- See *Show Statistics* on page 44 for information about statistics.
- For information about the Internet connection, see *Connection Status* on page 45.

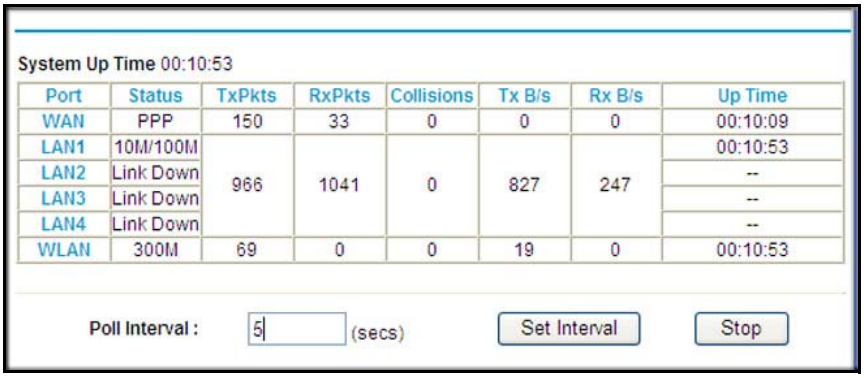


Field		Description
Account Name		The router model.
Firmware Version		The router firmware version.
Ethernet Port	MAC Address	The Media Access Control address.
	IP Address	The IP address being used by the Internet (WAN) port of the router. If no address is shown or the address is 0.0.0, the router cannot connect to the Internet.
	Network Type	This shows if the router is using a fixed IP address on the WAN. If the value is DHCP Client, the router obtains an IP address dynamically from the ISP.
	IP Subnet Mask	The IP subnet mask being used by the Internet (WAN) port of the router.
	Gateway IP Address	The IP address used by the router.
	Domain Name Server	The Domain Name Server addresses being used by the router.
Mobile Broadband	Modem Identity	The modem in use.
	Modem SW version	The software version of the modem.
	Modem driver version	The driver version of the modem.
	IMSI	International Mobile Subscriber Identity. SIM card identity.
	IMEI	International Mobile Equipment Identity. Unique identity of the modem.
	Operator	The ISP for the broadband wireless network.
	Network mode	The mode of the current network the modem is connected to. This is dependent on coverage and distance from the cell site.
Wireless Broadband Port	Connection Status	The status of the Internet connection.
	IP Address	The IP address that is used by the modem. If no address is shown, the router cannot connect to the Internet.
	Protocol	The protocol for the Internet connection, which is PPP (Point-to-Point).
	IP Subnet Mask	The IP subnet mask.
	Domain Name Server	The DNS server IP addresses that are used by the router. These addresses are obtained dynamically from the ISP.

Field		Description
LAN Port	MAC Address	The Ethernet MAC address that is used by the router's LAN port.
	IP Address	The LAN port IP address. The default is 192.168.0.1.
	DHCP	• **Off**. The router does not assign IP addresses to computers on the LAN. • **On**. The router assigns IP addresses to computers on the LAN.
	IP Subnet Mask	The LAN port IP subnet mask. The default is 255.255.255.0.
Wireless Port (See *Manually Configure Your Wireless Settings* on page 26.)	Name (SSID)	The service set ID, also known as the wireless network name.
	Region	The country where the unit is set up for use.
	Channel	The current channel, which determines the operating frequency.
	Wireless AP	Indicates if the access point feature is disabled or not. If not enabled, the WiFi LED on the front panel is off.
	Broadcast Name	Indicates if the router is configured to broadcast its SSID.

Show Statistics

Click the **Show Statistics** button on the Router Status screen to display router usage statistics:


System Up Time 00:10:53
Port Status TxPkts RxPkts Collisions Tx B/s Rx B/s Up Time
WAN PPP 150 33 0 0 0 00:10:09
LAN1 10M/100M 966 1041 0 827 247 00:10:53
LAN2 Link Down -
LAN3 Link Down -
LAN4 Link Down -
WLAN 300M 69 0 0 19 0 00:10:53
Poll Interval : 5 (secs)
Set Interval
Stop

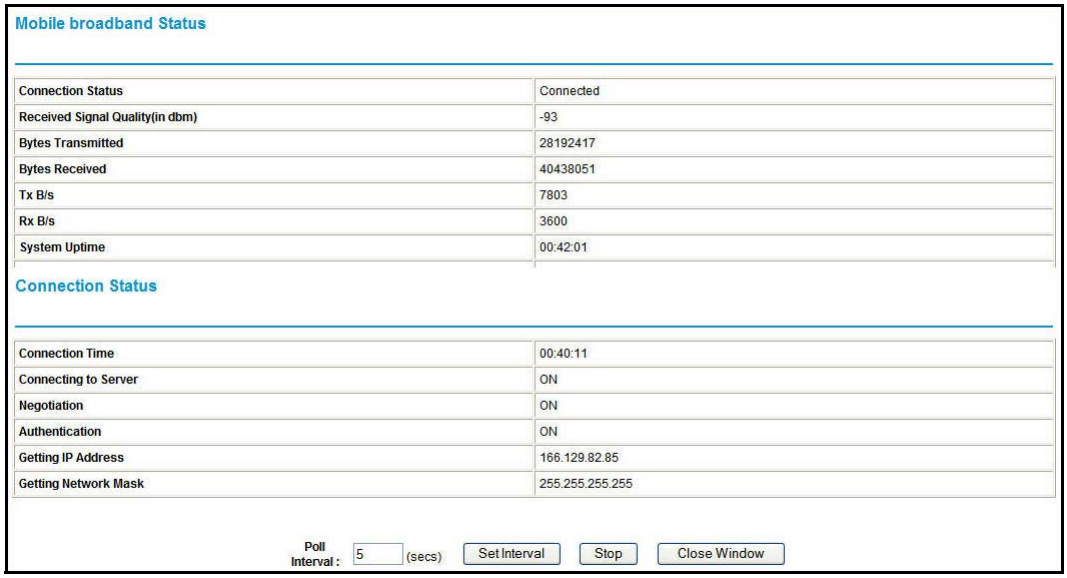
The following table explains the statistic fields.

Field	Description
Status	The link status.
TxPkts	The number of packets transmitted on this port since reset or manual clear.
RxPkts	The number of packets received on this port since reset or manual clear.
Collisions	The number of collisions on this port since reset or manual clear.

Field	Description
Tx B/s	The average egress line utilization for this port.
Rx B/s	The average ingress line utilization for this port.
Up Time	The time elapsed since the last power cycle or reset.

Connection Status

Click the **Connection Status** button on the Router Status screen:



This screen shows the following statistics:

Field		Description
Mobile broadband Status	Connection Status	The status of the Internet connection. • **Scanning**. The modem is scanning for broadband wireless networks in your area. • **Connected**. The router is connected to the Internet.
	Received Signal Quality (in dBm)	Modem radio reception. A small, negative number indicates good signal quality.
	Bytes Transmitted	The number of bytes transmitted in the most recent connection session.
	Bytes Received	The number of bytes received in the most recent connection session.
	Tx B/s	The transmission rate.
	Rx B/s	The receiving rate.
	System Uptime	Time elapsed since the last reboot.

Field		Description
Connection Status	Connection Time	The time elapsed since the last connection to the Internet through the broadband port.
	Connecting to Server	The connection status.
	Negotiation	Success or Failed.
	Authentication	Success or Failed.
	Getting IP Address	The IP address assigned to the WAN port by the Internet service provider.
	Getting Network Mask	The network mask assigned to the WAN port by the Internet service provider.

View Attached Devices

The Attached Devices screen shows all IP devices that the router discovered on the local network. From the main menu, select **Maintenance > Attached Devices**:

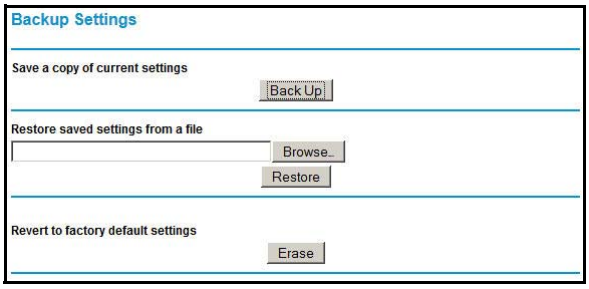
For each device, the table shows the IP address, device name if available, and the Ethernet MAC address. If the router is rebooted, this data is lost until the router rediscovers the devices. To force the router to look for attached devices, click the **Refresh** button.

Back Up, Restore, or Erase Your Settings

The configuration settings of the router are stored in a configuration file in the router. This file can be backed up to your computer, restored, or reverted to factory default settings. The procedures in the following sections explain how to do these tasks.

Back Up the Configuration to a File

1. Log in to the router. Type **http://www.routerlogin.net** in the address field of your Internet browser. Enter **admin** for the user name and your password (or the default, **password**).
2. From the main menu, select **Maintenance > Backup Settings** to display the Backup Settings screen.



3. Click **Back Up** to save a copy of the current settings.
4. Store the .cfg file on a computer on your network.

Restore the Configuration from a File

➢ **To restore the configuration:**

1. Log in to the router. Type **http://www.routerlogin.net** in the address field of your Internet browser. Enter **admin** for the user name and your password (or the default, **password**).
2. From the main menu, select **Maintenance > Backup Settings**.
3. Enter the full path to the file on your network, or click **Browse** to locate the file.
4. When you have located the .cfg file, click **Restore** to upload the file to the router.

   The router reboots.

Erase the Configuration

You can use this feature to erase the configuration settings and restore the router to the factory default settings.

➢ **To erase the configuration:**

1. From the main menu, select **Maintenance > Backup Settings**.
2. Click **Erase**.

   The router reboots.

   After you erase the configuration, the router password is **password**, the LAN IP address is **192.168.0.1**, and the router DHCP client is enabled.

Note: To restore the factory default settings when you do not know the login password or IP address, press the **Restore Factory Settings** button on the bottom of the router for 6 seconds.

Protect Access to Your Router

For security reasons, the router has its own user name and password. Also, after a period of inactivity, the login automatically disconnects. The user name and password are not the same as a user name or password you might use to log in to your Internet connection.

NETGEAR recommends that you change this password to a more secure password. The ideal password should contain no dictionary words from any language, and should be a mixture of both uppercase and lowercase letters, numbers, and symbols. Your password can be up to 30 characters.

Change the Built-In Password

1. To log in to the router, type **http://www.routerlogin.net** in the address field of your Internet browser. Enter **admin** for the user name and your password (or the default, **password**).

Note: If you changed the password and do not remember what it is, you can reset the router to its factory default settings. See *Restore the Configuration from a File* on page 47.

2. From the main menu, select **Maintenance > Set Password**.

3. To change the password, first enter the old password, and then enter the new password twice.
4. Click **Apply** to save your changes.

> **Note:** After changing the password, you must log in again to continue the configuration. If you have backed up the router settings previously, you should do a new backup so that the saved settings file includes the new password.

Change the Administrator Login Time-Out

For security, the administrator login to the router configuration times out after a period of inactivity. To change the login time-out period:

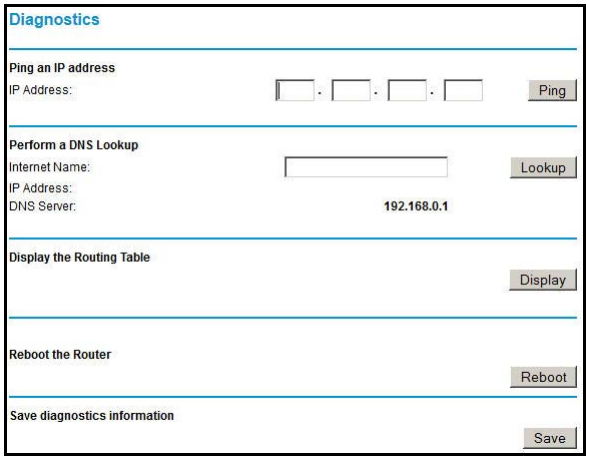
1. In the Set Password screen, type a number in the Administrator login times out field. The suggested default value is 5 minutes.
2. Click **Apply** to save your changes, or click **Cancel** to keep the current period.

Run Diagnostic Utilities and Reboot the Router

The router has a diagnostics feature. You can use the Diagnostics screen to perform the following functions from the router:

- Ping an IP address to test connectivity to see if you can reach a remote host. If Ping VPN is enabled, the ping packet always goes through the VPN if the VPN tunnel is enabled and working.
- Perform a DNS lookup to test if an Internet name resolves to an IP address to verify that the DNS server configuration is working.
- Display the routing table to identify what other routers the router is communicating with.
- Reboot the router to enable new network configurations to take effect or to clear problems with the router's network connection.

From the main menu, select **Maintenance > Diagnostics**.



- **Ping**. Ping an IP address.
- **Lookup**. A Domain Name Server (DNS) converts the Internet name such as www.netgear.com to an IP address. If you need the IP address of a server on the Internet, you can do a DNS lookup to find the IP address.
- **Display**. View the internal routing table. Typically, this information is used only by technical support.
- **Reboot**. Shut down and restart the router. If you reboot the router, you lose your connection. To access the router, you need to log in again after it has finished rebooting.
- **Save**. Save diagnostic information.

Upgrade the Router Firmware

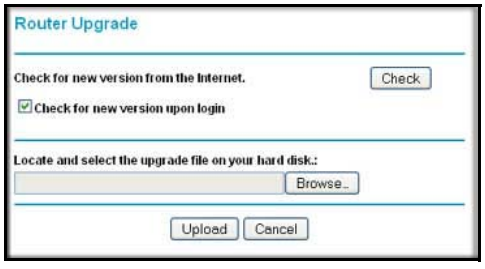
The router firmware is stored in flash memory, and can be upgraded as NETGEAR releases new firmware. Upgrade files can be downloaded from the NETGEAR website. If the upgrade file is compressed (a .zip file), you must first extract the binary (.bin or .img) file before uploading it to the router.

NETGEAR recommends that you back up your configuration before doing a firmware upgrade. After the upgrade is complete, you might need to restore your configuration settings.

1. Download and unzip the new firmware file from NETGEAR.

   The web browser used to upload new firmware into the router must support HTTP uploads. NETGEAR recommends using Microsoft Internet Explorer 5.0 or later, or Mozilla Firefox 2.0 or later.

2. Log in to the router. Type **http://www.routerlogin.net** in the address field of your Internet browser. Enter **admin** for the user name and your password (or the default, **password**).
3. From the main menu, select **Maintenance > Router Upgrade** to display this screen.



4. Click **Browse** to locate the binary (.bin or .img) upgrade file.

5. Click **Upload**.

WARNING:

When uploading firmware to the router, do not interrupt the web browser by closing the window, clicking a link, or loading a new page. When the upload is complete, your router automatically restarts. The upgrade process typically takes about 1 minute. In some cases, you might need to clear the configuration and reconfigure the router after upgrading.

Upgrade the Module Firmware

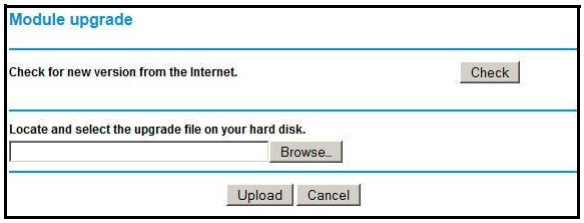
The module firmware is stored in flash memory, and can be upgraded as new firmware is released. Upgrade files can be downloaded from the NETGEAR website. If the upgrade file is compressed (a .zip file), you must first extract the binary (.bin or .img) file before uploading it to the router.

NETGEAR recommends that you back up your configuration before doing a module upgrade. After the upgrade is complete, you might need to restore your configuration settings.

1. Download and unzip the new firmware file from NETGEAR.

   The web browser used to upload new firmware into the router must support HTTP uploads. NETGEAR recommends using Microsoft Internet Explorer 5.0 or later, or Mozilla Firefox 2.0 or later.

2. Log in to the router. Type **http://www.routerlogin.net** in the address field of your Internet browser. Enter **admin** for the user name and your password (or the default, **password**).
3. From the main menu, select **Maintenance > Module Upgrade** to display this screen.



4. Click **Browse** to locate the binary (.bin or .img) upgrade file.
5. Click **Upload**.

WARNING:

When uploading firmware to the module, do not interrupt the web browser by closing the window, clicking a link, or loading a new page.

Advanced

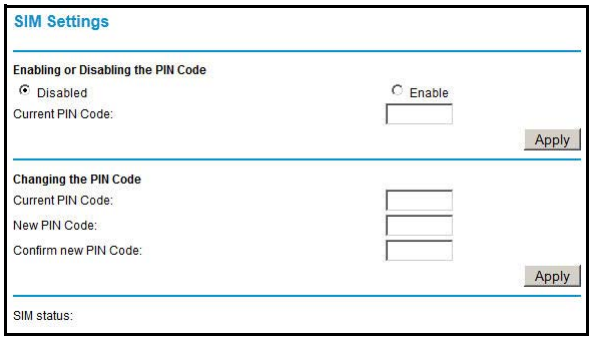
5

This chapter describes how to configure the advanced features of your LTE Broadband 11n Wireless Router.

- *SIM Settings*
- *Advanced Wireless Settings*
- *Wireless Repeating Function*
- *Port Forwarding and Port Triggering*
- *WAN Setup*
- *LAN Setup*
- *QoS Setup*
- *Dynamic DNS*
- *Use Static Routes*
- *Enable Remote Management*
- *Universal Plug and Play*

SIM Settings

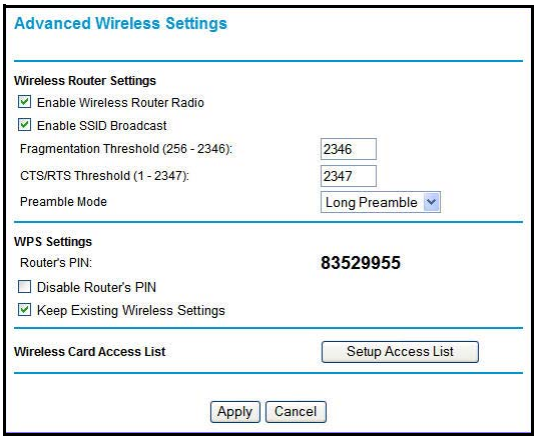
From the main menu, select **Advanced > SIM Settings** to display the following screen:



Field	Description
Enabling or Disabling the PIN Code	Controls whether the PIN code on the SIM card is used to connect to the network.
Changing the PIN Code	Changes the PIN code on the SIM card.
SIM status	Current SIM card access status.

Advanced Wireless Settings

From the main menu, select **Advanced > Advanced Wireless Settings** to display the following screen:



Field	Description
Enable Wireless Router Radio	Selected by default, this setting enables the wireless radio, which allows the router to work as a wireless access point. Turning off the wireless radio can be helpful for configuration, network tuning, or troubleshooting.
Fragmentation Length, CTS/RTS Threshold, and Preamble Mode	These settings should be left at their default settings.
Router's PIN	The PIN number used for Push 'N' Connect.
Disable Router's PIN	By default, this check box is cleared. This setting allows the WPS clients to discover the router's PIN.
Keep Existing Wireless Settings	By default, this check box is cleared. This setting allows the router to automatically generate the SSID and WPA/WPA2 security settings when it implements WPS. After WPS is implemented, the router automatically selects the **Keep Existing Wireless Settings** check box so that your SSID and wireless security settings remain the same if other WPS-enabled devices are added later.
Set Up Access List	Access control is disabled by default so that any computer configured with the correct SSID can connect. See *Restrict Access by MAC Address* on page 55.

Wireless Station Access Control

By default, any wireless computer configured with the correct SSID and wireless security settings is allowed access to your wireless network. You can use wireless access point settings in the Advanced Wireless Setting screen to further restrict wireless access to your network:

- **Turn off wireless connectivity completely**.
  You can completely turn off the wireless portion of the router. For example, if you use your notebook computer to wirelessly connect to your router, and you take a business trip, you can turn off the wireless portion of the router while you are traveling. Other members of your household who use computers connected to the router through Ethernet cables can still use the router. To turn off wireless connectivity, clear the **Enable Wireless Router Radio** check box on the Advanced Wireless Settings screen, and then click **Apply**.
- **Hide your wireless network name (SSID)**.
  By default, the router is set to broadcast its wireless network name (SSID). You can restrict wireless access to your network by not broadcasting the wireless network name (SSID). To hide your SSID, clear the **Enable SSID Broadcast** check box on the Wireless Settings screen, and then click **Apply**. Wireless devices do not see your router. You have to configure your wireless devices to match the wireless network name (SSID) of the router.

Note: The SSID of any wireless access adapters must match the SSID you configure in the router. If they do not match, you do not get a wireless connection to the router.

Restrict Access by MAC Address

For increased security, you can restrict access to the wireless network to allow only specific computers based on their MAC addresses. You can restrict access to only trusted computers so that unknown computers cannot wirelessly connect to the LTE Broadband 11n Wireless Router. MAC address filtering adds an obstacle against unwanted access to your network, but the data broadcast over the wireless link is fully exposed.

Note: If you configure the router from a wireless computer, add your computer's MAC address to the access list. Otherwise you lose your wireless connection when you click Apply. You must then access the router from a wired computer, or from a wireless computer that is on the access control list, to make any further changes.

➢ **To restrict access based on MAC addresses:**

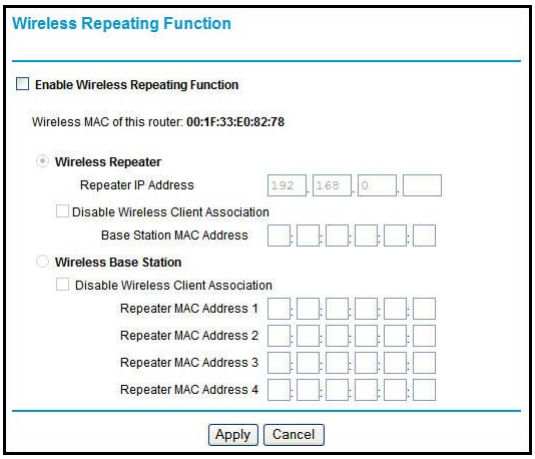
1. From the main menu, select **Advanced > Wireless Settings**. Click **Setup Access List** to display the Wireless Station Access List screen.

2. Adjust the list as needed for your network. You can add devices to this list. Click **Add** to display the following screen:

3. You can add devices to the list using either of the following methods:
   - If the computer is in the Available Wireless Cards table, select its radio button to capture its MAC address.
   - Use the Wireless Card Entry fields to enter the MAC address of the device added. The MAC address can usually be found on the bottom of the wireless device.
   - If no device name appears when you enter the MAC address, you can type a descriptive name for the computer that you are adding.
4. Click **Apply** to save these settings. Now, only devices on this list is allowed to connect wirelessly to the router.

Wireless Repeating Function

From the main menu, select **Advanced > Wireless Repeating Function** to display the following screen:



Field	Description
Enable Wireless Repeating	Select this check box when you want to use either bridge mode or repeater mode, and then select the mode you want for your environment. • **Wireless Repeater**. In this mode, the MBR1515 communicates *only* with another base station-mode wireless station. You must enter the MAC address (physical address) of the other base station-mode wireless station in the field provided. WEP / WPA-PSK [TKIP] can (and should) be used to protect this communication. • **Wireless Base Station**. Select this setting only if this MBR1515 is the master for a group of repeater-mode wireless stations. The other repeater-mode wireless stations must be set to wireless repeater-mode, using this MBR1515's MAC address. They then send all traffic to this master, rather than communicate directly with each other. WEP / WPA-PSK [TKIP] can (and should) be used to protect this traffic. If this option is selected, you must enter the MAC addresses of the other access points in the fields provided.

Port Forwarding and Port Triggering

Port forwarding and port triggering are advanced features that affect the behavior of the firewall in your router. In the Port Forwarding / Port Triggering screen, you can make local computers or servers available to the Internet for different services (for example, FTP or HTTP), to play Internet games (like Quake III), or to use Internet applications (like CU-SeeMe).

- Port forwarding is designed for FTP, web server, or other server-based services. Once port forwarding is set up, requests from the Internet are forwarded to the correct server.
- Port triggering monitors outbound traffic. When the router detects traffic on the specified outbound port, it remembers the IP address of the computer that sent the data and triggers the incoming port. Incoming traffic on the triggered port is then forwarded to the triggering computer. Port triggering allows requests from the Internet only after a designated port is triggered. Port triggering applies to chat and Internet games.

Port Forwarding

➢ **To set up port forwarding:**

1. From the main menu, select **Advanced > Port Forwarding/Port Triggering**. The following screen displays:

   By default, the **Port Forwarding** radio button is selected.

2. You can select a service or create a custom service.
   - Select a service from the **service name** drop-down list and specify the computer's IP address.
   - If you want to add a service that is not in the list, click the **Add Custom Service** button. Fill in the fields in the Add Custom Service screen.

   The service appears in the list.

Port Triggering

➢ **To set up port triggering:**

1. From the main menu, select **Advanced > Port Forwarding/Port Triggering**.
2. Select the **Port Triggering** radio button to display the following screen:

3. Click **Add Service** and fill in the fields in the Add Service screen.

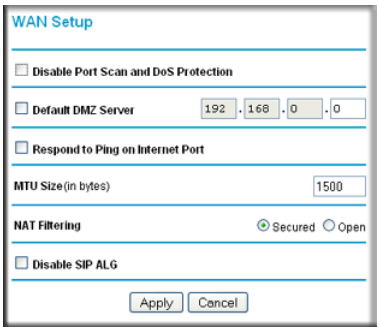
   The service appears in the list. For more detailed information, see the Port Forwarding/Port Triggering help.

WAN Setup

To change broadband Internet connection settings, use the Broadband Settings screen, as described in *Manually Configure Your Internet Settings* on page 13.

➢ **To view or change the WAN setup:**

1. From the main menu, select **Advanced > WAN Setup** to display the WAN Setup screen.
2. Change what you want, and then click **Apply** to save the settings.



The WAN Setup fields are described in the following table:

Setting	Description
Disable Port Scan and DoS Protection	This check box is cleared so that the firewall protects your LAN against port scans and denial of service attacks. This check box should be selected only in special circumstances.
Default DMZ Server	This feature is sometimes helpful when you are using some online games and videoconferencing. Be careful when using this feature because it makes the firewall security less effective. See *Set Up a Default DMZ Server* on page 60.
Respond to Ping on Internet	If you want the router to respond to a ping from the Internet, select this check box. This setting should be used only as a diagnostic tool, since it allows your router to be discovered. Do not select this check box unless you have a specific reason to do so.
MTU Size	Maximum transmit unit (MTU) value. For most Ethernet networks this setting is 1500 bytes, or 1492 bytes for PPPoE connections, or 1436 bytes for PPTP connections.
NAT Filtering	This parameter is set to **Secured** to provide a secure firewall to protect computers on the LAN from attacks from the Internet. The Open setting is less secure.
Disable SIP ALG	Some VoIP applications do not work well with SIP ALG. Selecting this check box might help your VoIP devices create or accept a call through the router.

Set Up a Default DMZ Server

WARNING:

For security reasons, you should avoid using the default DMZ server feature. When a computer is designated as the default DMZ server, it loses much of the protection of the firewall and is exposed to many exploits from the Internet. If compromised, the computer can be used to attack your network.

The default DMZ server feature is helpful when you are using some online games and videoconferencing applications that are incompatible with NAT. The router is programmed to recognize some of these applications and to work correctly with them, but there are other applications that might not function well. In some cases, one local computer can run the application correctly if that computer's IP address is entered as the default DMZ server.

Incoming traffic from the Internet is normally discarded by the router unless the traffic is a response to one of your local computers or a service that you have configured in the Port Forwarding/Port Triggering screen. Instead of discarding this traffic, you can have it forwarded to one computer on your network. This computer is called the default DMZ server.

➢ **To assign a computer or server to be a default DMZ server:**

1. Go to the WAN Setup screen as described in the previous section.
2. Select the **Default DMZ Server** check box.
3. Type the IP address for that server.
4. Click **Apply** to save your changes.

LAN Setup

The LAN Setup screen allows configuration of LAN IP services such as DHCP and RIP. These features can be accessed under Advanced in the router main menu.

The router is shipped preconfigured to use private IP addresses on the LAN side, and to act as a DHCP server. The router default LAN IP configuration is:

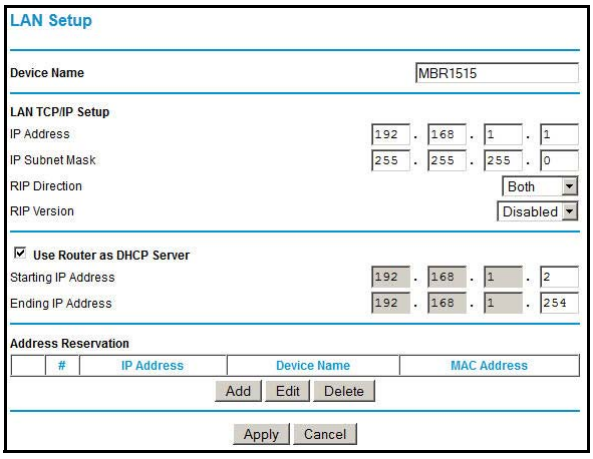
- LAN IP address. 192.168.0.1
- Subnet mask. 255.255.255.0

These addresses are part of the Internet Engineering Task Force (IETF)–designated private address range for use in private networks and should be suitable in most applications. If your network requires the use of a different IP addressing scheme, make those changes in this screen.

Tip: If you change the LAN IP address of the router while connected through the browser, you are disconnected, and so are others connected to the router. To connect to the router, you must open a new connection to the new IP address and log in again. Others using the router must restart their computers to connect to the router again.

➢ **To view or change the LAN setup:**

1. From the main menu, select **Advanced > LAN IP** to display the LAN Setup screen.



2. Change the settings. For more information, see *DHCP Settings* on page 62, or *Reserved IP Addresses* on page 63.

3. Click **Apply** to save the changes.

The LAN TCP/IP Setup parameters are explained in the following table:

Settings		Description
Device Name		
LAN TCP/IP Setup	IP Address	The LAN IP address of the router.
	IP Subnet Mask	The LAN subnet mask of the router. Combined with the IP address, the IP subnet mask allows a device to know which other addresses are local to it, and which must be reached through a gateway or router.
	RIP Direction	RIP (Routing Information Protocol, RFC1058 and RFC1389) allows a router to exchange routing information with other routers. The RIP Direction selection controls how the router sends and receives RIP packets. Both is the default. • When set to Both or Out Only, the router broadcasts its routing table periodically. • When set to Both or In Only, it incorporates the RIP information that it receives.
	RIP Version	This setting controls the format and the broadcasting method of the RIP packets that the router sends. (It recognizes both formats when receiving.) By default, this parameter is set to Disabled. • RIP-1 is universally supported. RIP-1 is probably adequate for most networks, unless you have an unusual network setup. • RIP-2 carries more information. Both RIP-2B and RIP-2M send the routing data in RIP-2 format. - RIP-2B uses subnet broadcasting. - RIP-2M uses multicasting.
DHCP Server For more information, see *DHCP Settings* on page 62.	Use Router as a DHCP Server	This check box is selected so that the router functions as a Dynamic Host Configuration Protocol (DHCP) server. See *DHCP Settings* on page 62.
	Starting IP Address	Specify the start of the range of the pool of IP addresses in the same subnet as the router.
	Ending IP Address	Specify the end of the range of the pool of IP addresses in the same subnet as the router.
Address Reservation For more information, see *DHCP Settings* on page 62.		When you specify a reserved IP address for a computer on the LAN, that computer receives the same IP address each time it accesses the router's DHCP server. Assign reserved IP addresses to servers that require permanent IP settings.

DHCP Settings

By default, the router functions as a Dynamic Host Configuration Protocol (DHCP) server, allowing it to assign IP, DNS server, and default gateway addresses to all computers connected to the router's LAN. The assigned default gateway address is the LAN address of the router. IP addresses are assigned to the attached computers from a pool of addresses

specified in this screen. Each pool address is tested before it is assigned to avoid duplicate addresses on the LAN.

For most applications, the default DHCP and TCP/IP settings of the router are satisfactory.

Use Router as DHCP Server

If another device on your network is the DHCP server, or if you manually configure the network settings of all of your computers, clear the **Use Router as DHCP Server** check box on the LAN Setup screen. Otherwise, leave it selected.

Specify the pool of IP addresses to be assigned by filling in the Starting IP Address and Ending IP Address fields. These addresses should be part of the same IP address subnet as the router's LAN IP address. Using the default addressing scheme, you should define a range between 192.168.0.2 and 192.168.0.254, although you might want to save part of the range for devices with fixed addresses.

The router delivers the following parameters to any LAN device that requests DHCP:

- An IP address from the range you have defined.
- Subnet mask.
- Gateway IP address is the router's LAN IP address.
- Primary DNS server, if you entered a primary DNS address in the Basic Settings screen; otherwise, the router's LAN IP address.
- Secondary DNS server, if you entered a secondary DNS address in the Basic Settings screen.
- WINS server (Windows Internet Naming Service Server) determines the IP address associated with a particular Windows computer. A WINS server records and reports a list of names and IP address of Windows computers on its local network. If you connect to a remote network that contains a WINS server, enter the server's IP address here. This setting allows your computers to browse the network using the Network Neighborhood feature of Windows.

Reserved IP Addresses

When you specify a reserved IP address for a computer on the LAN, that computer always receives the same IP address each time it accesses the router's DHCP server. Reserved IP addresses should be assigned to servers that require permanent IP settings.

➢ **To reserve an IP address:**

1. Click the **Add** button.
2. In the IP Address field, type the IP address to assign to the computer or server. Choose an IP address from the router's LAN subnet, such as 192.168.0.x.
3. Type the MAC address of the computer or server.

Tip: If the computer is on your network, it is listed on the same screen for your convenience. Selecting the radio button for each entry in the attached device list fills in the fields automatically with the computer's MAC address and name.

4. Click **Apply** to enter the reserved address into the table.

Note: The reserved address will not be assigned until the next time the computer contacts the router's DHCP server. Reboot the computer or access its IP configuration and force a DHCP release and renew.

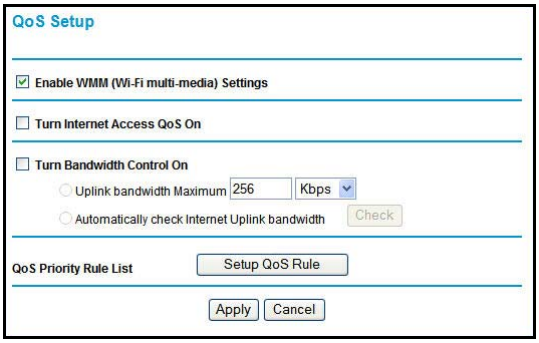
➢ **To edit or delete a reserved address entry:**

1. Select the button next to the reserved address you want to edit or delete.
2. Click **Edit** or **Delete**.

QoS Setup

QoS is an advanced feature that can be used to prioritize some Internet applications and online gaming, and to minimize the impact when the bandwidth is busy.

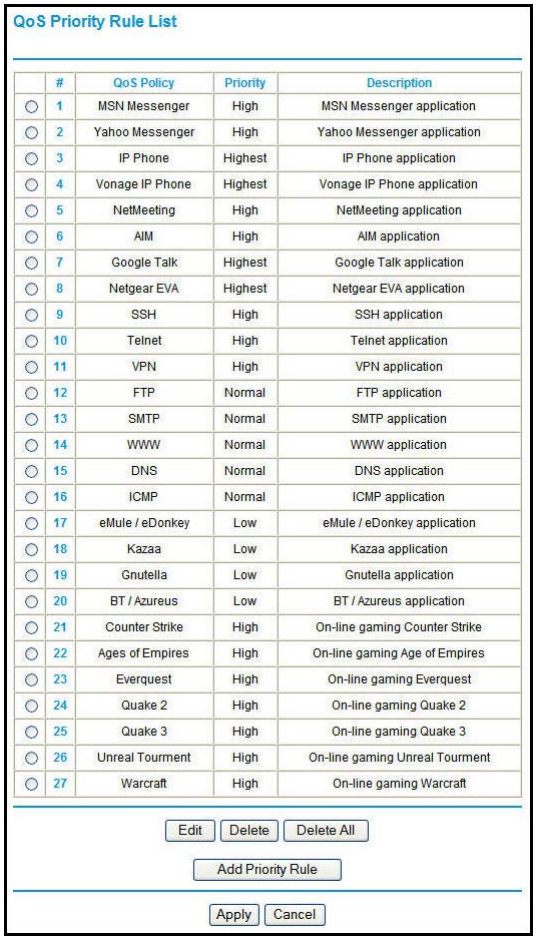
From the main menu, select **Advanced > QoS Setup** to display the following screen:



Field	Description
Enable WMM (Wi-Fi multi-media) Settings	WMM (Wireless Multimedia) is a subset of the 802.11e standard. WMM allows wireless traffic to have a range of priorities depending on the kind of data. Time-dependent information, such as video or audio, has a higher priority than normal traffic. For WMM to function correctly, wireless clients must also support WMM.
Turn Internet Access QoS On	If you enable QoS, the QoS function works to prioritize Internet access traffic. For the applications that are listed in the drop-down list (for example, On-line Gaming, Ethernet LAN Port, or a specified MAC address, see *QoS Priority Rules* on page 66), you can modify the priority level by clicking the **Edit** button, or clicking the **Delete** button to erase the priority rule. Otherwise, you can also define the priority policy for online gaming, an application, a LAN port, or the computer's MAC address by clicking the **Add Priority Rule** button.
Turn Bandwidth Control On	To set up the total maximum uplink bandwidth, click the **Check** button to detect current uplink bandwidth that help you to determinate the maximum bandwidth setting.

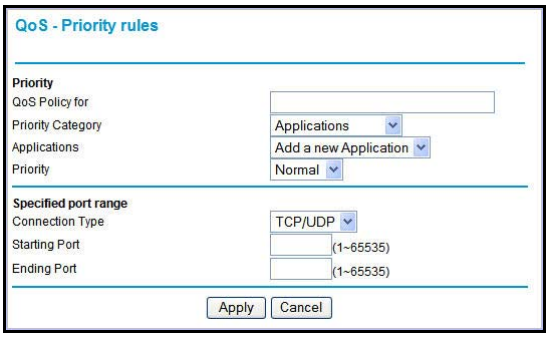
QoS Priority Rule List

From the QoS Setup screen, click **Setup QoS Rule** to display the following screen:


QoS Priority Rule List
QoS Policy Priority Description
1 MSN Messenger High MSN Messenger application
2 Yahoo Messenger High Yahoo Messenger application
3 IP Phone Highest IP Phone application
4 Vonage IP Phone Highest Vonage IP Phone application
5 NetMeeting High NetMeeting application
6 AIM High AIM application
7 Google Talk Highest Google Talk application
8 Netgear EVA Highest Netgear EVA application
9 SSH High SSH application
10 Telnet High Telnet application
11 VPN High VPN application
12 FTP Normal FTP application
13 SMTP Normal SMTP application
14 WWW Normal WWW application
15 DNS Normal DNS application
16 ICMP Normal ICMP application
17 eMule / eDonkey Low eMule / eDonkey application
18 Kazaa Low Kazaa application
19 Gnutella Low Gnutella application
20 BT / Azureus Low BT / Azureus application
21 Counter Strike High On-line gaming Counter Strike
22 Ages of Empires High On-line gaming Age of Empires
23 Everquest High On-line gaming Everquest
24 Quake 2 High On-line gaming Quake 2
25 Quake 3 High On-line gaming Quake 3
26 Unreal Tourment High On-line gaming Unreal Tourment
27 Warcraft High On-line gaming Warcraft
Edit
Delete
Delete All
Add Priority Rule
Apply
Cancel

QoS Priority Rules

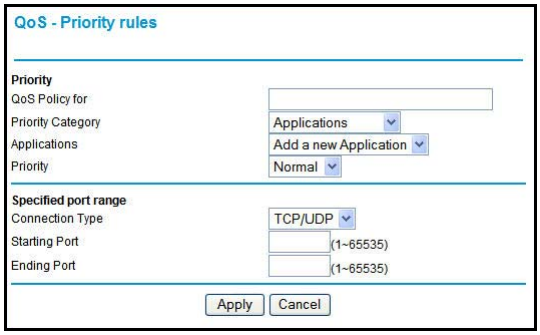
From the QoS Priority Setup screen, click **Add Priority Rule** to display the following screen:



For Applications or Online Gaming

➢ **To set up the priority for an application or online gaming:**

1. From the Priority Category list, select **Applications** or **On-line Gaming**.

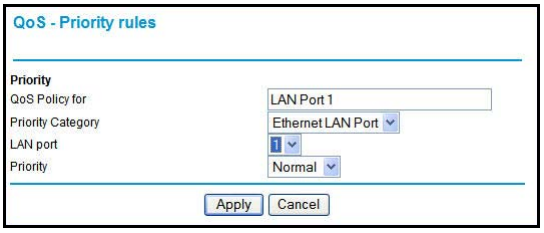


2. From the Applications or On-line Gaming list, select the Internet application or game for which you want to set the priority.
3. Select the priority level: **Highest**, **High**, **Normal**, or **Low**.
4. You can type the name in the QoS Policy field for this rule if you wisk.
5. Click **Apply**.

For Ethernet LAN Ports

➢ **To set up the priority for LAN port:**

1. From the Priority Category list, select **Ethernet LAN Port**.

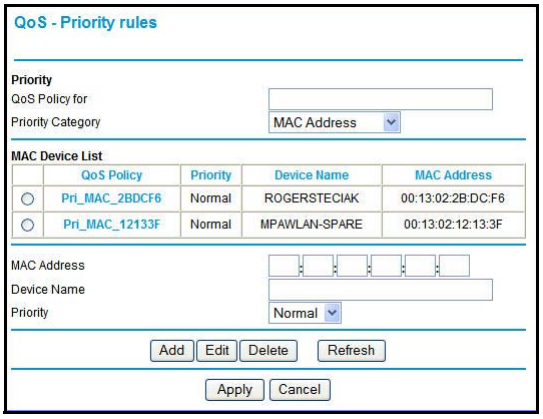


2. Select the LAN port number for which you plan to specify the priority level of those computers that connect through this LAN port.
3. Select the priority level: **Highest**, **High**, **Normal**, or **Low**.
4. You can type the name in the QoS Policy field for this rule if you wish.
5. Click **Apply**.

For MAC Addresses

➢ **To set up the priority for a specified computer using its MAC address:**

1. From the Priority Category list, select **MAC Address**.



2. Click the **Refresh** button to update the list of computers already connected to the router.
3. Select the entry's radio button.
4. Modify the information in the MAC Address and Device Name fields.
5. Select the priority level: **Highest**, **High**, **Normal**, or **Low**.
6. You can type the name in the QoS Policy field for this rule if you wish.
7. Click the **Edit** button.
8. Click **Apply**.

➢ **To add the priority for specified computer using its MAC address:**

1. From the Priority Category list, select **MAC Address**.
2. Enter the MAC address for the computer for which you are specifying the priority.
3. You can type a name that is easy to remember in the Device Name field.
4. Select the priority level: **Highest**, **High**, **Normal**, or **Low**.
5. You can type a name in the QoS Policy field for this rule if you wish.
6. Click the **Add** button.
7. Click **Apply**.

➢ **To delete a priority rule entry:**

1. Select the entry's radio button in the table.
2. Click the **Delete** button.
3. Click **Apply**.

Dynamic DNS

If your network has a permanently assigned IP address, you can register a domain name and have that name linked with your IP address by public Domain Name Servers (DNS). However, if your Internet account uses a dynamically assigned IP address, you do not know in advance what your IP address is, and the address can change frequently. In this case, you can use a commercial Dynamic DNS service to register your domain to their IP address, and forward traffic directed at your domain to your frequently changing IP address.

The router contains a client that can connect to a Dynamic DNS service provider. To use this feature, you must select a service provider and obtain an account with them. After you have configured your account information in the router, whenever your ISP-assigned IP address changes, your router will automatically contact your Dynamic DNS service provider, log in to your account, and register your new IP address.

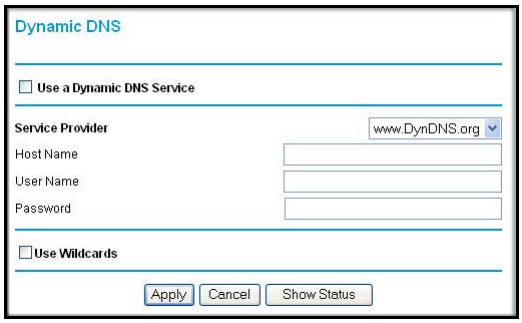
WARNING:

If your ISP assigns a private WAN IP address such as 192.168.x.x or 10.x.x.x, the Dynamic DNS service does not works because private addresses not are routed on the Internet.

➢ **To configure Dynamic DNS:**

1. From the main menu, select **Advanced > Dynamic DNS** to display the Dynamic DNS screen:
2. Access the website of one of the Dynamic DNS service providers whose names appear in the Service Provider drop-down list, and register for an account.

   For example, for dyndns.org, go to www.dyndns.org.



3. Select the **Use a Dynamic DNS Service** check box.
4. Select the name of your Dynamic DNS service provider.
5. Fill in the Host Name, User Name, and Password fields.

   The Dynamic DNS service provider might call the host name a domain name. If your URL is myName.dyndns.org, then your host name is myName. The password can be a key for your Dynamic DNS account.

   If your Dynamic DNS provider allows the use of wildcards in resolving your URL, you can select the **Use wildcards** check box to activate this feature.

   For example, the wildcard feature causes *.yourhost.dyndns.org to be aliased to the same IP address as yourhost.dyndns.org.

6. Click **Apply** to save your configuration.

Use Static Routes

Static routes provide additional routing information to your router. Under normal circumstances, the router has adequate routing information after it has been configured for Internet access, and you do not need to configure additional static routes. You must configure static routes only for unusual cases such as multiple routers or multiple IP subnets on your network.

Static Route Example

As an example of when a static route is needed, consider the following case:

- Your primary Internet access is through a cable modem to an ISP.
- You have an ISDN router on your home network for connecting to the company where you are employed. This router's address on your LAN is 192.168.0.100.
- Your company's network is 134.177.0.0.

When you first configured your router, two implicit static routes were created. A default route was created with your ISP as the router, and a second static route was created to your local network for all 192.168.0.x addresses. With this configuration, if you attempt to access a device on the 134.177.0.0 network, your router forwards your request to the ISP. The ISP forwards your request to the company where you are employed, and the request is likely to be denied by the company's firewall.

In this case you must define a static route, telling your router that 134.177.0.0 should be accessed through the ISDN router at 192.168.0.100.

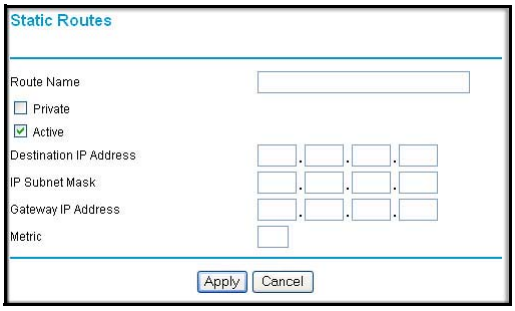
In this example:

- The Destination IP Address and IP Subnet Mask fields specify that this static route applies to all 134.177.x.x addresses.
- The Gateway IP Address fields specify that all traffic for these addresses should be forwarded to the ISDN router at 192.168.0.100.
- In the Metric field, a value of 1 works since the ISDN router is on the LAN.
  This value represents the number of routers between your network and the destination. This link is a direct connection, so it is set to 1.
- Private is selected only as a precautionary security measure in case RIP is activated.

➢ **To configure static routes:**

1. From the main menu, select **Advanced > Static Routes** to view the Static Routes screen.

2. Select the radio button of the static route you want to configure.
3. Click **Add** or **Edit** to display the following screen:



4. Fill in or change the fields:
   - **Route Name**. The route name is for identification purposes only.
   - **Private**. Select this check box if you want to limit access to the LAN only. The static route is not reported in RIP.
   - **Active**. Select this check box to make this route effective.
   - **Destination IP Address**, and **IP Subnet Mask**. If the destination is a single host, type a subnet value of **255.255.255.255**.
   - **Gateway IP Address**. This address has to be a router on the same LAN segment as the router.
   - **Metric**. Type a number from 2 through 15. This setting represents the number of routers between your network and the destination. Usually, a setting of 2 or 3 works, but if this link is a direct connection, set it to 2. For information about an ISDN router, see *Static Route Example* on page 70.
5. Click **Apply** to save your changes. If you added a static route, it is added to the Static Routes screen.

Enable Remote Management

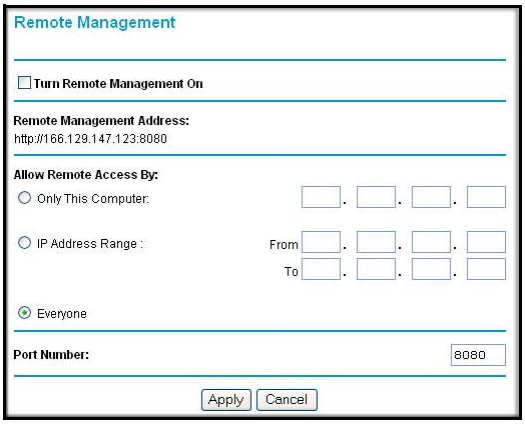
Using the Remote Management screen, you can allow a user or users on the Internet to configure, upgrade, and check the status of your router.

Tip: Be sure to change the router default password to a secure password. The ideal password should contain no dictionary words from any language, and should be a mixture of letters (both uppercase and lowercase), numbers, and symbols. Your password can be up to 30 characters.

➢ **To configure remote management:**

1. Log in to the router. Type **http://www.routerlogin.net** in the address field of your Internet browser. Enter **admin** for the user name and your password (or the default, **password**).

2. From the main menu, select **Advanced > Remote Management**:



3. Select the **Turn Remote Management On** check box.
4. Specify which external addresses are allowed to access the router's remote management.

   For security, restrict access to as few external IP addresses as practical:

   - To allow access from any IP address on the Internet, select **Everyone**.
   - To allow access from a range of IP addresses on the Internet, select **IP Address Range**. Enter a beginning and ending IP address to define the allowed range.
   - To allow access from a single IP address on the Internet, select **Only This Computer**. Enter the IP address that are allowed access.
5. Specify the port number that is used for accessing the router menu.

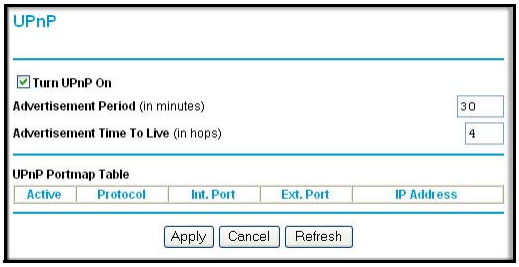
   Access normally uses the standard HTTP service port 80. For greater security, you can enter a different port number. Choose a number from 1024 through 65535, but do not use the number of any common service port. The default is 8080, which is a common alternate for HTTP.
6. Click **Apply** to have your changes take effect.

   When accessing your router from the Internet, type your router WAN IP address in your Internet browser address or location field, followed by a colon (:) and the custom port number. For example, if your external address is 134.177.0.123 and you use port number 8080, enter: **http://134.177.0.123:8080.** Be sure to include http:// in the address.

Universal Plug and Play

Universal Plug and Play (UPnP) helps devices such as Internet appliances and computers access the network and connect to other devices as needed. UPnP devices can automatically discover the services from other registered UPnP devices on the network.

1. From the main menu, select **Advanced > UPnP** to display the UPnP screen:



2. Fill in the settings on the UPnP screen:

- **Turn UPnP On**. UPnP can be enabled or disabled for automatic device configuration. The default setting for UPnP is enabled. If this feature is disabled, the router does not allow any device to automatically control the resources, such as port forwarding (mapping), of the router.
- **Advertisement Period**. The advertisement period is how often the router advertises (broadcasts) its UPnP information. This value can range from 1 to 1440 minutes. The default period is 30 minutes. Shorter durations ensure that control points have current device status at the expense of additional network traffic. Longer durations might compromise the freshness of the device status but can significantly reduce network traffic.
- **Advertisement Time To Live**. The time to live for the advertisement is measured in hops for each UPnP packet sent. The hop count is the number of steps allowed to propagate for each UPnP advertisement before it disappears. The number of hops can range from 1 to 255. The default value for the advertisement time to live is 4 hops, which should be fine for most home networks. If you notice that some devices are not being updated or reached correctly, then it might be necessary to increase this value a little.
- **UPnP Portmap Table**. The UPnP Portmap Table displays the IP address of each UPnP device that is currently accessing the router and which ports (internal and external) that device has opened.

3. To save or cancel your changes or refresh the table:
   - Click **Apply** to save the new settings to the router.
   - Click **Cancel** to disregard any unsaved changes.
   - Click **Refresh** to update the Portmap Table and to show the active ports that are currently opened by UPnP devices.

Troubleshooting

6

This chapter gives information about troubleshooting your LTE Broadband 11n Wireless Router. After each problem description, instructions are provided to help you diagnose and solve the problem. For the common problems listed, go to the section indicated.

- Is the router on?

  Go to *Basic Functioning* on page 75.
- Have I connected the router correctly?

  Go to *Basic Functioning* on page 75.
- I cannot access the router's configuration with my browser.

  Go to *Troubleshoot Access to the Router Main Menu* on page 77.
- How can I test the path from my computer to my router?

  Go to *Troubleshoot a TCP/IP Network with the Ping Utility* on page 79.
- I have configured the router but I cannot access the Internet.

  Go to *Troubleshoot the ISP Connection* on page 78.
- How can I set the correct date and time?

  Go to *Problems with Date and Time* on page 81.
- I want to clear the configuration and start over again.

  Go to *Restore the Default Configuration and Password* on page 81.

Basic Functioning

After you turn on power to the router, the following sequence of events should occur:

1. When power is first applied, verify that the Power LED is on.
2. After approximately 10 seconds, verify the following:
   a. The Power LED is still solid green. An amber light indicates that the unit has failed its power-on self-test (POST).
   b. The Internet LED is lit.
   c. The WiFi LED is lit. The WiFi radio is on by default.
   d. The Ethernet LAN port LED is lit when any local ports are connected.

      If a LAN port's LED is lit, a link has been established to the connected device. If a LAN port is connected to a 100 Mbps device, verify that the port's LED is green. If the port is 10 Mbps, the LED is amber.

   e. The Ethernet WAN port LED is lit when the router is connected to a wired modem.
   f. The Signal Quality LED is lit when the router has detected a mobile broadband signal.
      - A blue LED indicates excellent coverage.
      - A green LED indicates good coverage.
      - An amber LED indicates marginal coverage.

If any of these conditions does not occur, refer to the following table.

LED		Action
Power	Power LED is off.	• Make sure that the power cord is correctly connected to your router, and that the power supply adapter is correctly connected to a functioning power outlet. • Check that you are using the power adapter supplied by NETGEAR for this product. • If the error persists, you might have a hardware problem and should contact technical support.
	Power LED is amber.	There is a fault within the router. Try to clear the fault as follows: • Cycle the power to see if the router recovers. • Clear the router's configuration to factory defaults. This sets the router's IP address to 192.168.0.1. This procedure is explained in *Restore the Default Configuration and Password* on page 81. If the error persists, you might have a hardware problem and should contact technical support.

LED		Action
Internet	Internet LED is off.	Be sure the SIM card that you received is in the router. SIM cards from other devices do not function in the router, and this SIM card will not function in other devices.
	Internet LED is amber.	The router cannot connect to the Internet. Check the Internet connection option being used. • For the mobile broadband connection option, check the Signal Quality LED. • For the Ethernet connection option, check the WAN LED.
WiFi	WiFi LED is off.	The WiFi radio has been turned off. If you want a WiFi connection with the router, press the **WiFi** button to turn the WiFi radio back on.
	WiFi LED is not blinking.	If this LED does not blink when you are attempting to send data over the WiFi link, log in to the router menu using the Ethernet LAN connection and check your router's wireless (WiFi) configuration.
LAN	LAN LED is off.	If this LED does not light when an Ethernet connection is made, check the following: • Make sure that the Ethernet cable connections are secure at the router and at the hub or workstation. • Make sure that power is turned on to the connected hub or workstation.
WAN	WAN LED is off.	If this LED does not light when an Ethernet connection is made using the Ethernet connection option, check the following: • Make sure that the Ethernet cable connections are secure at the router and at the modem. • Make sure that power is turned on to the modem.
4G LTE	4G LTE LED is off.	The router cannot detect a 4G LTE signal.
Signal Quality	Signal Quality LED is off or red.	If this LED does not light when the mobile broadband connection option is used, check the following: • Check with your ISP to ensure that there is good coverage in the area. • Ensure that your mobile broadband account is active. • Ensure that the SIM card is inserted correctly into the router. • Locate the router near the window or other area of the building. Make sure that the Signal Quality LED is lit, indicating that there is mobile broadband coverage with the router. • Log in to the router menu and check the Internet configuration. Check that the user name, password, and APN with ISP are set correctly. If you use a PIN to connect to the Internet, make sure that it is entered correctly.

Troubleshoot Access to the Router Main Menu

If you are unable to access the router main menu from a computer on your local network, check the following:

- If you are using an Ethernet-connected computer, check the Ethernet connection between the computer and the router as described in the previous section.
- Make sure your computer's IP address is on the same subnet as the router. If you are using the recommended addressing scheme, your computer's address should be in the range of 192.168.0.2 to 192.168.0.254.

Note: If your computer's IP address is shown as 169.254.x.x: Recent versions of Windows and MacOS generate and assign an IP address if the computer cannot reach a DHCP server. These autogenerated addresses are in the range of 169.254.x.x. If your IP address is in this range, check the connection from the computer to the router, and reboot your computer.

- If your router's IP address was changed and you do not know the current IP address, clear the router's configuration to factory defaults. This procedure sets the router's IP address to 192.168.0.1. This procedure is explained in *Restore the Default Configuration and Password* on page 81.
- Make sure that your browser has Java, JavaScript, or ActiveX enabled. If you are using Internet Explorer, click **Refresh** to be sure that the Java applet is loaded.
- Try quitting the browser and launching it again.
- Make sure that you are using the correct login information. The factory default login name is **admin**, and the password is **password**. Make sure that Caps Lock is off when entering this information.

If the router does not save changes you have made in the web management interface, check the following:

- When entering configuration settings, be sure to click the **Apply** button before moving to another screen or tab, or your changes are lost.
- Click the **Refresh** or **Reload** button in the web browser. The changes might have occurred, but the web browser might be caching the old configuration.

Troubleshoot the ISP Connection

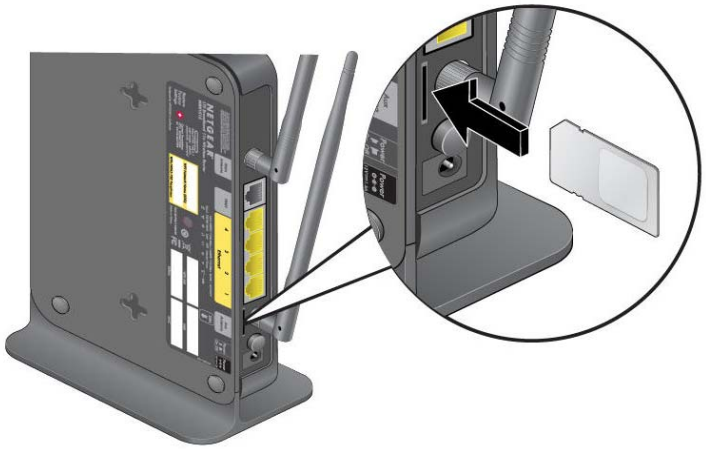
Check these possible sources of trouble if you are having difficulty connecting to or browsing the Internet.

Connect to the Internet

If unable to connect to Internet, check the following:

1. The Internet account is active.

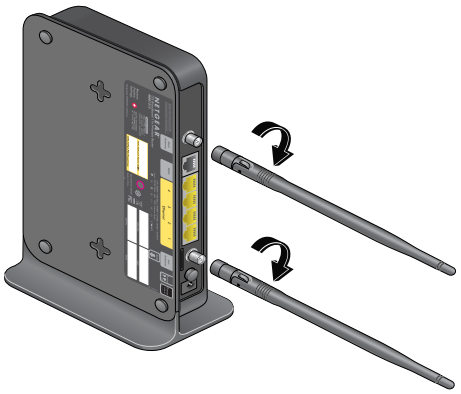
   If your ISP has provided you with a SIM card and you have not inserted it into the SIM card slot on the back of the router yet, do so now.



2. Wireless broadband coverage is available where the unit is located.
3. Access the router main menu to verify that the broadband settings are correct. Check with your ISP if you are unsure.
4. Check the location of the router.
   a. Move the router closer to a window for better access to the Internet signal.
      - A blue Signal Quality LED indicates excellent coverage.
      - A green Signal Quality LED indicates good coverage.
      - An amber Signal Quality LED indicates marginal coverage.
      - An unlighted Signal Quality LED indicates no coverage.

   b. Maintain recommended minimum distances between NETGEAR equipment and household appliances to reduce interference (see *Interference Reduction Table* on page 91).

5. Make sure that the external antennas are properly installed.



Troubleshoot Internet Browsing

If your router can obtain an IP address but your computer is unable to load any web pages from the Internet:

- Your computer might not recognize any DNS server addresses.

  A DNS server is a host on the Internet that translates Internet names (such as www addresses) to numeric IP addresses. Typically your ISP provides the addresses of one or two DNS servers for your use. If you entered a DNS address during the router's configuration, reboot your computer and verify the DNS address. Alternatively, you can configure your computer manually with DNS addresses, as explained in your operating system documentation.

- Your computer might not have the router configured as its TCP/IP router.

  If your computer obtains its information from the router by DHCP, reboot the computer, and verify the router address.

Troubleshoot a TCP/IP Network with the Ping Utility

Most TCP/IP terminal devices and routers contain a ping utility that sends an echo request packet to the designated device. The device then responds with an echo reply. You can easily troubleshoot a TCP/IP network by using the ping utility in your computer.

Test the LAN Path to Your Router

You can ping the router from your computer to verify that the LAN path to your router is set up correctly.

➢ **To ping the router from a PC running Windows 95 or later:**

1. From the Windows toolbar, click the **Start** button, and select **Run**.
2. In the field provided, type **ping** followed by the IP address of the router, as in this example:

```
ping 192.168.0.1
```

3. Click **OK**.

   You should see a message like this one:

   ```
   Pinging <IP address> with 32 bytes of data
   ```

   If the path is working, you see this message:

   ```
   Reply from < IP address >: bytes=32 time=NN ms TTL=xxx
   ```

   If the path is not working, you see this message:

   ```
   Request timed out
   ```

   If the path is not working correctly, you could have one of the following problems:

   - Wrong physical connections
     - Make sure that the LAN port LED is on. If the LED is off, follow the instructions in *Connect to the Internet* on page 78.
     - Check that the corresponding link LEDs are on for your network interface card and for the hub ports (if any) that are connected to your workstation and router.
   - Wrong network configuration
     - Verify that the Ethernet card driver software and TCP/IP software are both installed and configured on your computer or workstation.
     - Verify that the IP address for your router and your workstation are correct and that the addresses are on the same subnet.

Test the Path from Your Computer to a Remote Device

After verifying that the LAN path works correctly, test the path from your computer to a remote device.

1. From the Windows toolbar, click the **Start** button, and select **Run**.
2. In the Windows Run window, type:

   `ping -n 10` *IP address*

   where *IP address* is the IP address of a remote device such as your ISP's DNS server.

If the path is functioning correctly, replies as in the previous section are displayed. If you do not receive replies:

- Check that your computer has the IP address of your router listed as the default router. If the IP configuration of your computer is assigned by DHCP, this information is not visible in your computer's Network Control Panel. Verify that the IP address of the router is listed as the default router.
- Make sure that the network address of your computer (the portion of the IP address specified by the netmask) is different from the network address of the remote device.
- Check that your cable or DSL modem is connected and functioning.

- If your ISP assigned a host name to your computer, enter that host name as the account name in the Basic Settings screen.
- Your ISP could be rejecting the Ethernet MAC addresses of all but one of your computers. Many broadband ISPs restrict access by allowing only traffic from the MAC address of your broadband modem, but some ISPs additionally restrict access to the MAC address of a single computer connected to that modem. If so, you must configure your router to clone or spoof the MAC address from the authorized computer. See the *LTE Broadband 11n Wireless Router MBR1515 Installation Guide*.

Problems with Date and Time

The Schedule screen displays the current date and time of day. The LTE Broadband 11n Wireless Router uses the Network Time Protocol (NTP) to obtain the current time from one of several network time servers on the Internet. Each entry in the log is stamped with the date and time of day. Problems with the date and time function can include the following:

- Date shown is January 1, 2000.
  Cause: The router has not yet successfully reached a network time server. Check that your Internet access settings are configured correctly. If you have completed configuring the router, wait at least 5 minutes, and check the date and time again.
- Time is off by one hour.
  Cause: The router does not automatically sense daylight savings time. On the Schedule screen, select or clear the Automatically Adjust for Daylight Savings Time check box.

Restore the Default Configuration and Password

This section explains how to restore the factory default configuration settings, changing the router's admin password to **password** and the IP address to **192.168.0.1**. You can erase the current configuration and restore factory defaults in two ways:

- Use the Erase feature (see *Erase the Configuration* on page 48).
- Press the **Restore Factory Settings** button on the bottom of the router for 6 seconds. Use this method for cases when the administration password or IP address is not known.

The factory default settings are shown in *Factory Default Settings* on page 83.

Supplemental Information

A

This appendix provides the following information:

- *Factory Default Settings*
- *Technical Specifications*

Factory Default Settings

Use the Restore Factory Settings button on the bottom of your router to reset all settings to their original factory default settings. This procedure is called a hard reset. To perform a hard reset, press and hold the **Restore Factory Settings** button for 6 seconds. Your router returns to the factory configuration settings that are shown in the following table.

Feature		Default Behavior
Router login	User login URL	http://www.routerlogin.net *or* http://www.routerlogin.com
	User name (case-sensitive)	admin
	Login password (case-sensitive)	password
Internet connection	WAN MAC address	Use default address
	WAN MTU size	1500
	Port speed	AutoSense
Local network (LAN)	LAN IP	192.168.0.1
	Subnet mask	255.255.255.0
	RIP direction	None
	RIP version	Disabled
	RIP authentication	None
	DHCP server	Enabled
	DHCP starting IP address	192.168.0.2
	DHCP ending IP address	192.168.0.254
	DMZ	Disabled
	Time zone	PST for North America
	Daylight saving time adjustment	Disabled
Firewall	Inbound communication from the Internet	Disabled (except traffic on port 80, the HTTP port)
	Outbound communication to the Internet)	Enabled (all)
	Source MAC filtering	Disabled

Feature (continued)		Default Behavior (continued)
Mobile broadband	Internet service provider	Verizon
	APN	vzwinternet
	Access number	*99***3#
	PDP type	IPV4IPV6
	User name	none required
WiFi	Wireless communication	Enabled
	SSID name	See label on the bottom of router
	Security	WPA-PSK/WPA2-PSK mixed mode
	Broadcast SSID	Enabled
	Transmission speed	Auto (maximum wireless signal rate derived from IEEE Standard 802.11 specifications. Actual throughput varies. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, lower actual data throughput rate.)
	Country/Region	United States
	RF channel	Auto
	Operating mode	Up to 145 Mbps
	Data rate	Best
	Output power	Full
	Access point	Enabled
	Authentication type	Open system
	Wireless Card Access List	All wireless stations allowed

Technical Specifications

Technical Specifications	
Network protocol and standards compatibility	TCP/IP, DHCP
Power adapter	• North America: 120V AC, 60 Hz, input • 12V DC @ 1.5A output
Physical specifications	• Dimensions: 6.8 in. x 5.03 in. x 1.28 in. (173 mm x 128 mm x 33 mm) • Weight: 0.65 lbs without the stand (0.29 kg)
Environmental specifications	• Operating temperature: 0° to 40°C (32º to 104ºF) • Operating humidity: 90% maximum relative humidity, noncondensing
Electromagnetic emissions	FCC Part 15 Class B; IC; EN 55 022 (CISPR 22), Class B
Interface specifications	• LAN: 10BASE-T or 100BASE-Tx, RJ-45 • WAN: 10BASE-T or 100BASE-TX, RJ-45
Antenna connection	• R-TNC connector

Wall-Mounting

B

This appendix provides instructions for wall-mounting your router.

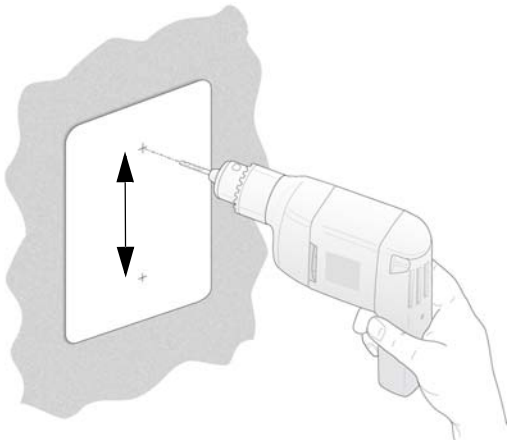
Your router's location can affect wireless connections. For example, the thickness and number of walls the wireless signal needs to pass through might limit its range. For best results, place your router:

- Near an AC power outlet, close to computers you plan to connect with Ethernet cables, and near locations where you use wireless computers. For best signal strength, the router should be within line of sight of your wireless devices.
- In an elevated location, keeping the number of walls and ceilings between the router and your wireless computers to a minimum.
- Away from electrical devices that are potential sources of interference, such as ceiling fans, home security systems, microwaves, or the base for a cordless phone.

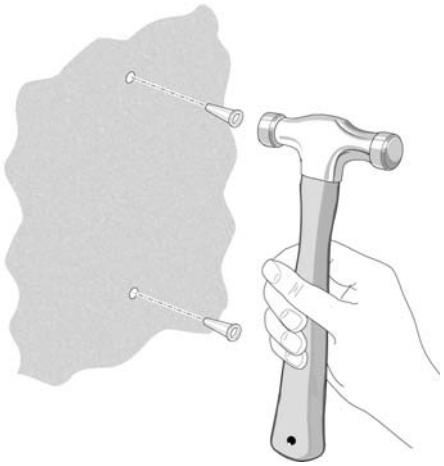
➢ **To wall-mount the router:**

1. Drill holes in the wall where you want to wall-mount the router.

Holes should be 9.5 in. (24.1 cm) center to center.



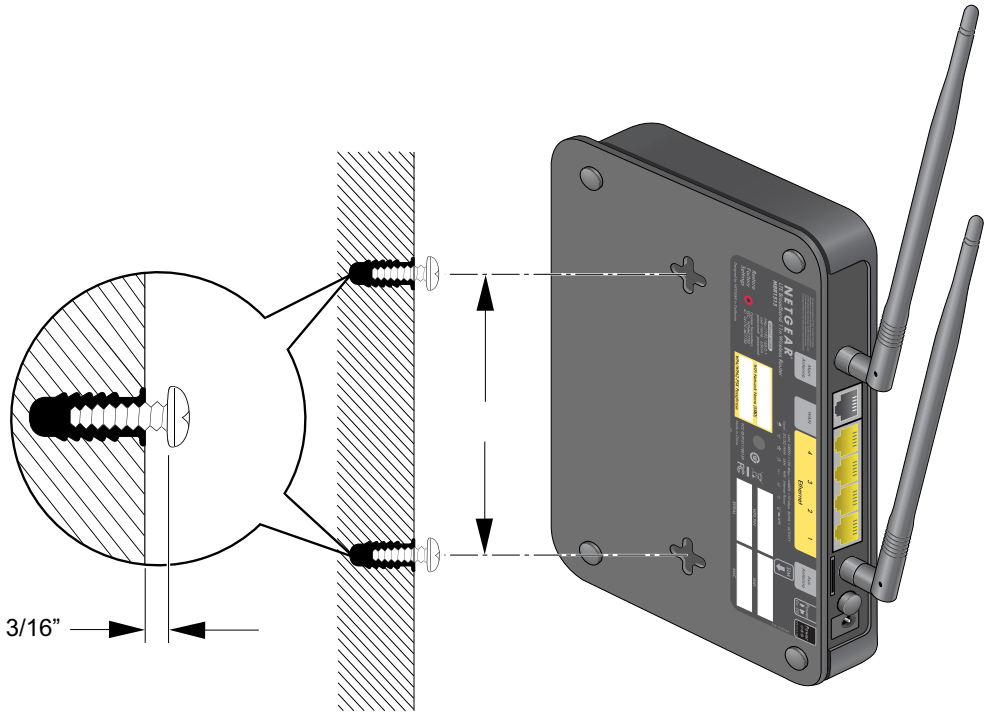
2. Install wall anchors in the holes.



Use pan head Phillips wood screws, 3.5 x 20 mm (diameter x length, European) or No. 6 type screw, 1 inch long (U.S.).

3. Detach the stand from the unit.

4. Insert screws into the wall anchors, leaving 3/16 in. (0.5 cm) of each screw exposed.



5. For best wireless performance, position the antennas at right angles to each other.

Compliance Notification

C

Regulatory Compliance Information

Note: This section includes user requirements for operating this product in accordance with National laws for usage of radio spectrum and operation of radio devices. Failure of the end-user to comply with the applicable requirements may result in unlawful operation and adverse action against the end-user by the applicable National regulatory authority.

Note: This product's firmware limits operation to only the channels allowed in a particular Region or Country. Therefore, all options described in this user's guide may not be available in your version of the product.

FCC Requirements for Operation in the United States

FCC Information to User

This product does not contain any user serviceable components and is to be used with approved antennas only. Any product changes or modifications will invalidate all applicable regulatory certifications and approvals.

FCC Guidelines for Human Exposure

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC Declaration of Conformity

We, NETGEAR, Inc., 350 East Plumeria Drive, San Jose, CA 95134, declare under our sole responsibility that the LTE Broadband 11n Wireless Router MBR1515 complies with Part 15 Subpart B of FCC CFR47 Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

FCC Radio Frequency Interference Warnings & Instructions

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following methods:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an electrical outlet on a circuit different from that which the radio receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution

- Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
- This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
- For product available in the USA market, only channel 1~11 can be operated. Selection of other channels is not possible.
- This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

Canadian Department of Communications Radio Interference Regulations

This digital apparatus (LTE Broadband 11n Wireless Router MBR1515) does not exceed the Class B limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

This Class [B] digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe [B] est conforme à la norme NMB-003 du Canada

Industry Canada

This device complies with RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE: Radiation Exposure Statement:

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Caution:

Ce dispositif est conforme à la norme CNR-210 d'Industrie Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

NOTE IMPORTANTE: Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

Interference Reduction Table

The table below shows the recommended minimum distance between NETGEAR equipment and household appliances to reduce interference (in feet and meters).

Household Appliance	Recommended Minimum Distance (in feet and meters)
Microwave ovens	30 feet / 9 meters
Baby Monitor - Analog	20 feet / 6 meters
Baby Monitor - Digital	40 feet / 12 meters
Cordless phone - Analog	20 feet / 6 meters
Cordless phone - Digital	30 feet / 9 meters
Bluetooth devices	20 feet / 6 meters
ZigBee	20 feet / 6 meters

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